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REPORTS

OF THE

PEABODY MUSEUM

OF

AMERICAN ARCHÆOLOGY AND ETHNOLOGY.

IN CONNECTION WITH

HARVARD UNIVERSITY.

VOLUME III.
1880-86.

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PRINTED BY ORDER OF THE BOARD OF TRUSTEES.
1887.

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PREFATORY NOTE.

THE first volume of the Reports of the Peabody Museum was made up in 1876, and contained all the Reports of the late Professor Jeffries Wyman, the first Curator, whose services in the original organization of the Museum, until his lamented death in 1874, can never be too highly appreciated. That volume contained, also, a Report by Professor Asa Gray, the Curator *pro tempore* during a part of the years 1874 and 1875, together with two Reports of Mr. F. W. Putnam, who was appointed Curator in the latter year.

The second volume, which was made up in 1880, contained four Reports of Mr. Putnam, with several supplementary Papers on special subjects connected with American Archæology and Ethnology.

The present volume contains the annual Reports of Mr. Putnam, as Curator, for the last seven years, together with other supplementary Papers, and gives an account of the Museum to the present time.

The three volumes together furnish a complete history of the Institution for twenty years, under the charge of successive Curators.

The next volume will commence with the administration of the Museum by a Professor of the University,—Mr. Putnam having been appointed “the Peabody Professor of American Archæology and Ethnology,” at Harvard University, on the 12th of January, 1887. He will still remain Curator *ex officio*, agreeably to the provisions of Mr. Peabody’s Letter of Trust.

W.

31 March, 1887.

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PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY
IN CONNECTION WITH
HARVARD UNIVERSITY.

FOUNDED BY GEORGE PEABODY, OCTOBER 8, 1866.

TRUSTEES.

- ROBERT C. WINTHROP, Boston, 1866. *Chairman.*
CHARLES FRANCIS ADAMS, Quincy, 1866; *resigned*, 1881.
FRANCIS PEABODY, Salem, 1866; *deceased*, 1867.
STEPHEN SALISBURY, Worcester, 1866. *Treasurer*, 1866-1881.
ASA GRAY, Cambridge, 1866. *Pro tempore Curator of the Museum*, 1874.
JEFFRIES WYMAN, Cambridge, 1866; *deceased* 1874. *Curator of the Museum*, 1866-1874.
GEORGE PEABODY RUSSELL, Salem, 1866; *resigned*, 1876. *Secretary*, 1866-1873.
HENRY WHEATLAND, Salem, 1867. Successor to Francis Peabody, as President of the Essex Institute. *Secretary*, 1873.
THOMAS T. BOUVÉ, Boston, 1874-1880. Successor to Jeffries Wyman, as President of the Boston Society of Natural History.
THEODORE LYMAN, Brookline, 1876. Successor to George Peabody Russell, by election.
SAMUEL H. SCUDDER, Boston, 1880. Successor to Thomas T. Bouvé, as President of the Boston Society of Natural History.
JOHN C. PHILLIPS, Boston, 1881. Successor to Charles Francis Adams, by election.

OFFICERS OF THE MUSEUM.

- FREDERICK WARD PUTNAM, *Curator*, 1875.
LUCIEN CARR, *Assistant Curator*, 1877.
MISS JENNIE SMITH, *Assistant*, 1878.
EDWARD E. CHICK, *Assistant in charge of the Building*, 1878.

FOURTEENTH ANNUAL REPORT.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

THE Trustees of the Peabody Museum of American Archæology and Ethnology herewith respectfully communicate to the President and Fellows of Harvard College, as their Fourteenth Annual Report, the Reports of their Curator and Treasurer presented at the Annual Meeting, March 7, 1881.

ROBERT C. WINTHROP,
CHARLES FRANCIS ADAMS,
STEPHEN SALISBURY,
ASA GRAY,
HENRY WHEATLAND,
THEODORE LYMAN,
SAMUEL H. SCUDDER.

CAMBRIDGE,
MAY 31, 1881.

ABSTRACT FROM THE RECORDS.

MONDAY, MARCH 7, 1881. The Annual Meeting of the Board of Trustees was held this day, at 2 P.M., in the Museum, Cambridge. Present: MESSRS. WINTHROP, ADAMS, SALISBURY, LYMAN, SCUDDER, WHEATLAND, and the CURATOR.

The Report of the TREASURER was read and accepted and ordered to be printed under the direction of the Treasurer and Curator, as a part of the Fourteenth Annual Report of the Board.

MR. SALISBURY resigned the office of Treasurer, the duties of which he had performed since the organization of the Board.

VOTED, that the Trustees accept his resignation with deep regret, and desire to place upon record their sincere thanks for his long and valuable services in this responsible position.

MR. THEODORE LYMAN was unanimously elected Treasurer.

The CURATOR submitted his report on the expenditures during the year, which was accepted and ordered to be printed.

The CURATOR read his report on the operations of the Museum during the year, which was accepted and ordered to be printed.

The TREASURER was authorized to pay to the Curator the income of the funds for the ensuing year.

HON. CHARLES FRANCIS ADAMS resigned his position on the Board of Trustees.

The Board, in accepting his resignation, expressed deep regret that he should feel compelled thus to sever his connection with them, and offered him their grateful acknowledgments and best wishes.

MR. JOHN C. PHILLIPS of Boston was unanimously elected to fill the vacancy on the Board created by the retirement of Mr. Adams.

The meeting then adjourned.

HENRY WHEATLAND,
Secretary.

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of Archaeology and Ethnology:—

GENTLEMEN :—Since your meeting here, a year ago, considerable progress has been made in the arrangement of the collections, and numerous changes have been brought about, all tending towards the final grouping and proper exhibition of the various objects in the Museum.

The collections thus far exhibited in the new and permanent cases are so arranged as to show both their ethnological and archæological bearings; the object of this arrangement being to exhibit, as far as possible, the present condition of a people, and to trace its history, its connections and, if possible, its origin in far distant time by the records which we have of its life, its arts, and its industries. Of course, by such an arrangement, the various peoples of the earth will be unequally represented by the collections in the Museum, and there always will be gaps to be filled. Still, it seems to me that it is the proper basis upon which such a Museum as this should be arranged, and the one that will prove the most instructive in the effort to solve the great problem of the origin and distribution of man. When the time shall come for the transfer of the collections pertaining to the nearly related nations of mankind, to the large halls which we shall have when the next section of the building is erected, the natural sequence of such an arrangement will be better seen and understood, than it is in our present rooms, where the separation of the several groups has to be more or less arbitrary. In making this separation, geographical divisions have been followed. In pursuance of this plan, the northern room on the first floor is now given to objects taken from the mounds and stone-graves of the Mississippi Valley and eastward, to which are added, as, probably, belonging to the same peoples, the objects from caves in Kentucky, Ohio and Tennessee.

By this arrangement every student may draw such conclusions as he thinks just in regard to the relations of the recent Indian tribes of some parts of the country, many of which certainly built mounds, with the builders of earthworks in other portions of the country, and of different times. To carry out the comparison still further, the student may, under the present arrangement, go to another room where he will be able to study objects from known Indian tribes, and from Indian graves found in various parts of the country; as well as the large collection of stone implements, and other objects classed as surface finds, which are consequently, in great part, the work of unknown or doubtful periods, although the probability is that the majority of such specimens are comparatively recent.

The principles of this arrangement must not be understood to exclude the presentation of other important subjects, such as the corresponding developments of implements, weapons, arts and customs among different peoples, and other auxiliary collections illustrative of the general history and progress of man from geological time.

Since the last meeting the three cases on the first northern gallery, which were then occupied by the "Bucklin collection" from Peru, have been filled with objects from Central America and Mexico, so that, with the exception of the two wall cases in which the small Egyptian collection is still temporarily exhibited, this gallery is now devoted to the Mexican and Central American collections.

By the erection of cases in the hall on the second floor, room has been secured there for the exhibition of the collections from the ancient and modern Pueblos and the Cliff-dwellings, including the series of models of Cliff-houses and Pueblos which were formerly in the room below. There is still room for another case on the floor of this hall, which will soon be constructed and will be filled with other things pertaining to the Pueblo collection, which are for the present stored in the workrooms. The walls of this hall are hung with a series of large photographs taken by the Geological and Geographical Surveys under the direction respectively of Major POWELL and Capt. WHEELER, and for which we are indebted to the gentlemen named and to the SMITHSONIAN INSTITUTION and the CHIEF OF ENGINEERS, U. S. A. Among these photographs are pictures of several of the Moqui towns and a number of views

taken at Zuñi, as well as several views of ruined Pueblos, and a few photographs of the inhabitants of Zuñi. Hayden's map of the country, embracing the region from the Rio Grande to the Colorado, on which the positions of the ruins, cliff-houses, and present Pueblos are marked, is also hung in this hall.

The room on the southern side of the hall with its gallery has also been arranged and opened to the public since your last meeting. The floor of this room is devoted to the collections from South America, both of recent and ancient times, and the sequence and connections of South American ethnology and archaeology are there fairly shown.

It is intended to devote the gallery of this room to the Pacific Islands and Australia, but until the collections from those regions are increased, and until another place is ready for the small collections from Africa, China, India and Japan, these latter will be temporarily exhibited on the gallery, as, also, for a short time, will be a portion of the collection relating to the manufactures of the present Indians of Mexico.

The northern room on the second floor has also been rearranged during the past year, and now contains the articles from the Pacific coast of North America and a few small special collections, temporarily exhibited in the old cases. These will be removed in the course of another year to make way for new cases.

The general collection of human crania and skeletons is in process of arrangement in the upper rooms and cannot be opened to the public for a year or more, though it is accessible for study, and has been very largely used by special workers in craniology and pathology. Three or four pathologists are now engaged in preparing papers based upon the many interesting osteological specimens preserved in this collection. In this connection, I may call attention to the recent papers on the bony tumor in the ear by Dr. J. Clarence Blake (*American Journal of Otology*), based upon a study of our collection of crania from the mounds, and one by Mr. Carr, on the crania of the New England Indians, just printed in the Memorial Volume of the Boston Society of Natural History. A number of the specimens have also been borrowed for illustration and description by medical men of Boston and Cambridge, and two doctors of dentistry have found in the collection much of interest to their profession.

The use that has thus been made of this collection shows its importance in other ways besides its strictly ethnological value, and it has been freely opened to all properly qualified investigators.

While alluding to this department I may add that it has been very largely increased during the year, principally by the transfer, by Mr. AGASSIZ, of the collection of human crania from the Zoölogical Museum. By this transfer we receive three hundred crania from Peru, fourteen from Hawaii, four from India, one from New Zealand, one from Straits of Magellan, and five of North American Indians, also portions of skeletons from Hawaii and Hayti, and a number of casts of skulls. By the valuable donation from Dr. W. STURGIS BIGELOW of which special mention is made in another place, twenty-one mummied heads and fourteen crania were received from Peru. Three heads of Egyptian mummies have been received, two of which were from the BOSTON SOCIETY OF NATURAL HISTORY and one by purchase. Two of these heads are of particular interest in showing the method of dressing the hair by the ancient Egyptians. From Dr. TOPINARD of Paris we have received a valuable addition of sixteen crania of Frenchmen before the eighteenth century. The collection from caves in Mexico, secured by Dr. PALMER, and of which further mention will be made, contained twenty-nine well-preserved crania and seven nearly perfect skeletons. Professor PUMPELY has presented the cranium and portion of the skeleton of an Indian dug up in a street of Oswego, N. Y. Mr. S. V. PROUDFIT has sent the cranium of an Indian child from a grave near Glenwood, Iowa. In the collection obtained by Dr. DAVID MACK from burial mounds in Florida are eleven crania and many fragments. Mr. WM. McADAMS, jr., of Otterville, Ill., kindly gave to the Museum the four crania from mounds in Illinois which he exhibited at the Boston Meeting of the American Association for the Advancement of Science. The explorations of Mr. CURTIS in Arkansas have added forty-six crania and portions of numerous skeletons, among which are many interesting pathological specimens, to our already large and important collection from the southwestern mounds. In the ANDREWS collection, recently received, there are several very old crania from a mound in Ohio, and Mr. SILAS COURTRIGHT has also sent us a cranium which he obtained from the mound explored by Prof.

Andrews. These last make a very valuable addition to the few crania known from the Ohio mounds.

To the late Geo. A. Otis, Surgeon and Brevet Lieutenant-Colonel, U. S. A., we have been indebted, as in past years, for photographs and memoranda relating to the more important and remarkable crania received at the Army Medical Museum, of which he was for the past seventeen years the indefatigable and honored curator. An old and intimate friend of Prof. Wyman, he ever welcomed me most cordially, as Wyman's successor to the curatorship of this Museum, and our official relations soon ripened into a personal friendship to be severed only by his death. By the decease of Dr. Otis I feel that I have lost a friend upon whose help on anatomical subjects I could always rely, and that anthropological science and the Government have lost a long-tried and faithful worker and an honored officer.

Death has indeed been severe upon the friends of the Museum during the past year, for not only have we to mourn the loss of Dr. OTIS, but of Count POURTALES, Dr. HALDEMAN, Prof. ANDREWS and Mr. CURTIS. By the death of the Keeper of the Museum of Comparative Zoölogy, L. F. de POURTALES, in July last, not only has a long continued personal friendship been sundered, but the Museum has lost one who was deeply interested in its objects and progress, and who on many occasions has personally and officially given his kindly and valuable assistance.

Dr. S. S. HALDEMAN made his first but long contemplated visit to the Museum in August last, and while here he was so much impressed with the importance of our collections and method of arrangement that he promised large accessions from his own valuable collection from the Susquehanna valley. Returning home, he died suddenly, within a week, and before he had time to carry out his good intentions in relation to the Museum. During the past few years Dr. Haldeman, who was in full sympathy with Dr. Abbott's work in New Jersey, was in the habit, from time to time, of giving to the latter specimens of particular interest which have been in turn presented to the Museum by Dr. Abbott. The important and finely illustrated memoir by Dr. Haldeman, on the contents of the Rock-shelter at Chickies, Pennsylvania, published since his death, for copies of which we are indebted to his family, will ever associate his name with American Archæology.

Our long-trying and faithful fellow workman, Mr. EDWIN CURTIS of Nashville, Tenn., died suddenly, of heart disease, at his home, on the 6th of December last.¹ When I was engaged in making explorations of the mounds and stone-graves in the vicinity of Nashville in 1877, I secured Mr. Curtis as my chief assistant, and he soon became a most valuable and reliable aid. On leaving Tennessee I arranged with him to carry on the work I had begun, and, acting under special appropriations granted for the purpose, he has since been for the greater part of the time at work exploring for the Museum and interesting others in its behalf. After a pretty thorough exploration of several of the ancient cemeteries and mounds in Tennessee, during which he opened several thousands of the stone-graves of that region, the contents of which are now in the Museum, he had business for a while in Kansas and Missouri, and afterwards in the central portion of Arkansas. During these business trips he was able to spend considerable time in archaeological work, with the important results which have been recorded from time to time in our annual reports. In the winter of 1879 he began an extensive work for the Museum on the St. Francis river in eastern Arkansas, and remained there in camp with several laborers, exploring mounds and old village sites, until the spring freshets of 1880 drove him from the field. During this time he made a thorough examination of numerous burial mounds which proved to be exceedingly rich in pottery and other objects. A portion of this remarkable collection was noticed in the last report, but the larger part was not received until last spring and is recorded in the list of additions for the past year. The whole collection has been within the past month arranged in the "Mound-builders'" room, and it will ever be a memorial of a most faithful and devoted friend of the Museum.

¹ EDWIN CURTIS was born in North Lansing, Tompkins Co., N. Y., on January 27, 1830, and died at Nashville, Tenn., December 6, 1880. He started in life as a tailor. In 1863 he entered the Commissary department in Tennessee, where he remained until the close of the war. He soon after removed his family to Nashville and settled there, and was employed by the Government in the improvements of the Tennessee and Cumberland rivers. He was afterwards employed on the Mississippi levee, and in railroad and bridge building in various portions of the south and west. Mr. Curtis had a sturdy honest character, which combined with the large practical experience he had obtained and a knowledge of handling his men, rendered him unusually well qualified for the hard and rough labor he undertook for the Museum, while his enthusiastic zeal in its behalf was not only a great source of pleasure to me, but resulted in making many strong friends for the Museum in the South, to whom we are under many obligations.

Early last summer Prof. ANDREWS² wrote that he had packed a barrel with human bones and other objects for the Museum. He then hoped to make further explorations and to come on to Cambridge with the specimens in the summer, but he was soon after prostrated by a combination of gastric and nervous troubles which resulted fatally. During his geological survey of portions of the state of Ohio, Prof. Andrews was impressed with the importance of making a careful and thorough exploration of the mounds, earthworks and other archæological remains so numerous in the southern portions of the state, and in 1875 he offered his services to the Museum. The results of his first year's exploration for the Museum are given in our Tenth Report, which contains a detailed account of the numerous mounds he examined, with descriptions and illustrations of the objects found in them. A perusal of that paper will show how much we had to expect from our friend, had he been spared to continue the work he wished so much to accomplish. His last exploration was of "Battle Mound" in Fairfield county, and the interesting collection obtained at that time, with a fine series of stone implements from various parts of the state of Ohio, has, within the past month, been received at the Museum, just as he had carefully packed them not long before his death. But few explorers of our mounds have been so well prepared for the careful work required as was Prof. Andrews. His training in field geology and in the natural sciences was of great value, while his education enabled him to describe things as they existed, and his care in preserving and labelling the articles found gave such an authen-

² Rev. EBENEZER BALDWIN ANDREWS, LL. D., was born in Danbury, Conn., April 29, 1821, and died at his residence in Lancaster, Ohio, on Aug. 14, 1880. He passed his freshman year at Williams, but on his brother being appointed as president of Marietta College he left Williams and graduated at Marietta in 1842. Deciding to follow his father and four elder brothers in the ministry he entered Princeton Seminary where he graduated in 1845. He then settled in Housatonic, Mass., and afterwards at New Britain, Conn., until 1851, when he was elected Professor of Natural Sciences at Marietta, which chair he held until 1869 when he was appointed on the Geological Survey of Ohio, in charge of the southeastern district. Not long before his death he was appointed by the President one of the inspectors of the U. S. Mint. During the war Prof. Andrews served as Major and Colonel of the 36th Ohio Regiment. He was a man of more than ordinary power and ability and contributed largely to the scientific and educational interests of his adopted state. As a geologist he was particularly interested in the coal and oil region of Ohio and West Virginia, and his contributions on these subjects have been both numerous and important. He was also the author of a text book of Geology which has been widely used in the western schools and colleges. Highly educated, refined, courteous, affectionate and sympathetic in disposition, he was much respected and beloved by all his numerous friends.

ticity to the collections he secured that his methods cannot be too highly praised.

As will be seen by the "List of Additions to the Museum" during the past year, many accessions have been made, notwithstanding our poverty has prevented the purchase of large collections and the continuation of extensive explorations.

The BUCKLIN collection from Peru still remains stored in the Museum subject to purchase, and it is greatly to be regretted that the means have not yet been found by which it can be permanently secured for exhibition in our cases. Several other large private collections from Mexico, Central America and the Pacific Islands have been offered to the Museum at fair prices, but it is likely that they will all find their final resting places in Europe, as other American Museums seem to be no better able than this to secure them for our own country.

The largest gift during the year was that received from Dr. W. STURGIS BIGELOW of Boston, and consists of a large collection of Peruvian relics. It is particularly rich in fabrics and garments of various kinds, many of which are of elaborate and interesting patterns, both woven and embroidered. It also contains several of the well-known ancient Peruvian work-baskets with their contents, also personal ornaments, packages of corn, beans and prepared food, a gourd-dish filled with crabs, baskets of various patterns, an exceedingly fine lot of implements and weapons made of wood and stone, and a remarkable club head of copper or bronze, consisting of several rays around a central perforated portion in which the wooden handle is inserted. This is the same kind of weapon as one presented a few years ago by Mr. Agassiz, but differs in having each point engraved to represent a human head which faces in opposite directions on alternate points.³ There are also in this collection a tattooed human arm, the skeleton of a "mummy" with its cloth wrappings, and a number of heads of "mummies" which are extremely interesting as they show the method of wearing the hair by these old Peruvians. There are also a number of crania, several of which are artificially distorted, some being much flattened and others exceedingly elongated. In many ways this valuable gift has added greatly to the importance of the

³ In the collection of Mr. W. S. VAUX of Philadelphia there is another club-head of this same character and design which I have described in detail in a chapter on implements of this kind, both of stone and bronze. U. S. Geographical Surveys West of the 100th Merid. Lt. G. M. Wheeler, U. S. Engineers, in charge; vol. VII.

Peruvian collection, and could the "Bucklin collection" now be secured we should indeed have a most instructive representation of Peruvian antiquities.

A number of impressions on paper, or "squeezes" of inscriptions in the "Tombs of the Kings," taken by Mrs. ASA GRAY a few years ago and presented by her to the Museum, makes a very interesting addition to the Egyptian collection.

From the LIBRARY OF HARVARD COLLEGE we have received the large sheet, now on our walls, containing a full size tracing, of the inscription on Dighton Rock, made by Prof. STEPHEN SEWALL of Harvard in 1768. This is the fifth of the copies or drawings made of this famous rock, the first of which was by Dr. Danforth in 1680. A recent photograph of the rock hangs near this tracing, and a comparison of the two will show several of the modern improvements on the old Indian record.

From Mr. AGASSIZ the Museum has received, in addition to the large collection of crania already mentioned, several valuable objects from Mexico which were obtained by the late Prof. AGASSIZ during the Hassler Expedition. Two "sacrificial yokes" of stone, and a human head in profile cut in stone, are of particular interest and unlike anything in the Museum.

To Dr. C. L. METZ and Dr. FRANK W. LANGDON we are much indebted, in continuation of former favors, for a number of objects found during the explorations, which these and other gentlemen connected with the Madisonville Literary and Scientific Society are so faithfully making of an ancient and very extensive burial place in the Little Miami Valley in Ohio. The care with which this remarkable cemetery is being explored by the Society at Madisonville is worthy of much praise, and the many interesting and important discoveries that have been made are carefully described, with numerous illustrations, in the three parts of the journal of the explorers already printed under the editorship of Mr. C. F. LOW.

Mr. GEO. W. SWEET has sent to the Museum a small collection of objects obtained by the partial examination of a mound in Dakota Territory, which is of special interest from the character of the pottery. While only fragments of a number of vessels of various sizes were found in the mound, they show that the pottery was well made of fine clay, black, and principally ornamented by impressions of twisted cords of several sizes.

Another interesting little lot of pottery is that received from Dr. D. S. KELLOGG, and collected in the vicinity of Plattsburg on Lake Champlain. The diversity of ornament—cord-marked, incised and stamped—on these fragments is very great, and of considerable interest in the study of early and rude decorative art.

Mr. S. V. PROUDFIT has also sent to the Museum a number of fragments of pottery from Wells Co., Iowa, accompanied by an interesting manuscript recording his exploration of an old Indian site from which he obtained the specimens.

To the new member of the Board of Trustees, the Museum is indebted for a collection, consisting of nine pieces of pottery, obtained by his brother, the late Rev. D. C. SCUDDER, from a megalithic cist in the Madura district, southern India. These specimens were described and figured in the Proceedings of the Boston Society of Natural History for 1865, and as they are the only representatives we have of the early wheel-made pottery of India, they are an important addition to our small collection of objects from that country.

In the last report, mention was made of the reception of a number of objects from Japan, obtained for the Museum by Prof. E. S. MORSE, during his residence in that country as Professor of Zoölogy in the University of Tokio. Since the return of Prof. Morse, these have been arranged in the second southern gallery and have been properly labelled under his direction. The collection is of particular interest in illustrating the daily life of the Japanese, and also contains a well selected series of ancient and modern pottery, the value of which is greatly increased by the authenticity of the name and date of each piece. The small models of a Japanese house, parlor, kitchen and junk are of general interest.

The only collection purchased during the year, with the exception of the small lot from Mr. Dodge mentioned farther on, is the one from Mr. Collier, for which a special appropriation was made at the last meeting. This is catalogued under 317 entries, and consists principally of stone implements and ornaments from the Ohio valley, a number of things from the mounds in Ohio and Virginia, and two bronze implements from Great Britain.

By the kindness of a friend, a small sum of money was given to be expended in explorations, and as Dr. DAVID MACK was then in Florida and had expressed a desire to make an exploration of

some of the mounds in Orange county at an estimated expense of less than one hundred dollars, the money thus received was sent to him with proper instructions in relation to the work to be done. The numerous objects received from this exploration are of particular interest as they add further proof that many of the burial mounds of Florida were erected by the Indians after contact with the Spaniards. One group of mounds was enclosed by an embankment, and was very likely the site of an Indian village. In a burial mound in this group, a number of ornaments made of silver, copper and brass were found, also glass beads and iron implements, which were associated with pottery and stone implements of native make. This furnishes conclusive evidence that the Indians of Florida continued to build mounds over their dead after European contact; for the care with which the exploration was made, and the depth at which the skeletons and their associated objects were found, are conclusive as to the burials being the original ones in the mound and not those of an intrusive people. From this statement it must not be supposed that all the mounds of Florida are of so late a period, and there is reason to believe that region was early inhabited by a mound-building people, probably the second or third in succession to those who formed the *first* and very old shellheaps which are found in many parts of the state.

Last winter, word was most reluctantly sent to Dr. FLINT, who has for some time been so zealous in his explorations in Nicaragua, that the income of the Museum would not permit further expenditure for explorations at present. He was then busy in the vicinity of Tola and much to his disappointment he closed his labors and forwarded the results of his latest work to the Museum. These consisted of numerous specimens of pottery, a number of stone implements, and ornaments of shell, bone and stone, including a few of jadeite, adding much to the former large collections for which we are indebted to his labors. As soon as time will permit for a careful study and description of the important collections which have been received from Dr. Flint, his notes will be embodied in a paper which will contain much of interest relating to the early people of Nicaragua. The many copies he has carefully made of the inscriptions on the rocks and in the caves will also prove a valuable addition to our knowledge of the enigmatical rock inscriptions of Central America. It is greatly to be

regretted that the want of funds has caused this suspension of the labors of so good a worker in such an important field, and it is to be hoped that it will be but temporary.

The last work done by Mr. EDWIN CURTIS, as already mentioned, was in eastern Arkansas. The collection obtained, consisting of several thousand specimens, is recorded in the catalogue under fourteen hundred and thirty-one entries. It includes forty-six human crania in good condition, and numerous fragments of human skeletons, among which are about twenty of pathological interest. One human bone, the upper half of a tibia, is of particular interest as it has been cut and afterwards burnt. This is strongly suggestive of anthropophagy, but the bone may have been cut in two and burned for some other reason. The mounds explored were rich in pottery, and nine hundred and thirty-three vessels of various shapes and of different designs were obtained, besides numerous fragments. A number of these vessels are ornamented with colored designs in red and yellow, and many are of animal forms. One very fine specimen is a jar representing a human head, on which the features are well made by moulding and carving. The face is painted light yellow and the rest of the jar is colored red. The ear (one is missing) has several perforations as if for ornaments. Altogether, this is a good piece of work and there seems little reason to doubt but that it expresses the facial characters of the people among whose bones it was found. When found in the mound, a well-made bowl, painted red, was inverted over the jar, and served to protect it. Many of these vessels are ornamented with incised lines forming various designs, or with knobs and finger-nail marks. Only a single fragment of cord-marked pottery was found. Among the articles of pottery are twenty-one pipes, several small ladles, and a number of objects of unknown use. Many beads and pendants made of marine shells were found with the skeletons, and also several shells perforated for suspension, probably ornaments. Two axe-shaped objects are made of cannel coal, one of which is perforated. These have sharp edges, but it does not seem probable that they were used as cutting implements. A number of ornaments made of copper were also obtained, and with the neck bones of two children were found several copper beads, shell beads, and a number of pendants cut from shell. These are evidently the remains of necklaces. The action of the copper has

partly preserved the cord upon which the objects were strung, and has also stained the bones of the necks about which they were placed. Considerable red ochre, both in mass and powdered, and several little lumps of a pink pigment, were found in some of the graves, often placed in small cups and jars. Stone implements were not very numerous, but a number of arrowpoints and knives of flint, polished celts and other implements of well-known forms, were obtained from the graves. Of implements made of bones and of antlers there are many specimens, and also a number of beads made of bone. Among the implements made of antlers, there is a beautiful sharp chisel which has been protected from decay by a slight burning. This is the only one of the kind I know of from the mounds and resembles very closely some of those from the Swiss lakes. Another article made from an antler is of a singular character. It is of the full length of the antler of a large deer, and has been carefully and symmetrically cut down, and smoothed from base to point so that it now has the shape and curvature of a small tusk of an elephant. Near the base, a hole has been drilled in which is placed a small plug of bone. Charred corn-cobs, nuts and acorns, and numerous bones of mammals, birds and fishes, give us an idea of the food of the people; and some charred pieces of string and rope indicate the vegetable fibres of which they made use. This brief account of this important collection conveys but a slight idea of its interest and ethnological value.

The mounds from which these numerous objects were obtained are situated on both sides of the St. Francis river, and are usually surrounded by earthwalls and ditches forming enclosures of from three or four to about eighteen or twenty acres in extent. In some of these enclosed fields, which have been under cultivation for twenty or thirty years, the ground was strewn with stone implements of various kinds, fragments of pottery, pieces of shell and other objects, which have been turned up by the plough.

The largest of the mounds in the Stanley group, of about twenty, was forty feet high by about the same in diameter on top. The other mounds in this group were five or six feet in height and about fifty in diameter, but like most of the lower mounds they had been reduced in size by cultivation. Many of the mounds in the other groups were from five to eight feet in height, but those called the Rose mounds are, if I correctly understand Mr. Curtis' notes, numer-

ous little tumuli covering a natural elevation of about fifteen feet and of five or six acres in extent. While in some of the enclosures the burials seem only to have been made in the mounds, in others there were many graves, from three to five feet in depth, all about the mounds. These graves contained pottery and other objects of the same character as those found in the mounds, and the shape and condition of the crania are the same from both; so that there seems to be no reason to doubt that they all pertain to one people.

That these former inhabitants of this region were of the same people with those who lived in southeastern Missouri, where similar earthworks and enclosures have been found, and are so well described in the Memoir of the Archæological Section of the St. Louis Academy of Science, there can be no doubt; and that they were closely allied to the stone-grave people and moundbuilders of the Cumberland valley in Tennessee seems to be probable, but there were many slight variations in their customs, and also apparently in their crania, that indicate differences of time, or suggest tribal distinctions. That these remains from Arkansas are those of a people who were the immediate ancestors of the village Indians of that region, mentioned by the early writers, is very probable; but that in these remains we have what is left of the people who were in direct contact with the early white explorers is very doubtful from the negative fact of the absence of all articles of European manufacture in the graves and mounds. Of course this is simply negative evidence, but as we know from the contents of Indian graves and mounds made after contact with the white men, that glass beads, ornaments and implements of gold, silver, brass, bronze and iron, and other valued possessions obtained from the whites, were buried with the dead, as well as objects of native make, the negative evidence I have mentioned is of considerable weight; particularly when we have, as in the case of the Cumberland valley and St. Francis and Missouri explorations, the evidence of the contents of many thousand graves. The only thing obtained by Mr. Curtis on the St. Francis, indicating that Indians lived there who were in contact with the whites, is one of the little pointed handles of antler, which has the remains of two iron points, possibly nails, embedded in one end. Of course this implement was used after the arrival of the whites, but although it is, with the exception of the iron, the same as those found in the graves and mounds, this particular

one was found *on the surface*, in a ploughed field, and while it may have been of the time of the last of the mound people of the region, it is far more likely to have been of a more recent date. Had this single implement been found in a mound associated with other objects, the story it would have told would have been far different.

In the last report, mention was made of a number of singular and large flint implements obtained by Mr. CURTIS from a mound in Stuart Co., Tennessee, and I have now to add that the three large flint "cores" from the same place, which were left at the time for want of transportation, were received last spring. We have now five of these chipped masses of flint, three of which were from the mound and two were found in a ploughed field near by. They are by far the largest masses of worked flint that have, to my knowledge, ever been found. They vary in length from twenty-two to twenty-five inches, and in width from six to eight inches, and are smaller at the ends than in the middle. While such chipped masses are generally called "cores" these are very likely the rough blocking-out of large implements, similar to some of the finished specimens from the mounds in Tennessee, and are of special interest in showing the amount of labor required to make a large flint implement.

As mentioned in the last report, Dr. EDWARD PALMER was engaged during the close of the year 1879 in explorations in Texas. Although from want of funds it became necessary to recall him from the field, he found the means to continue his work for a few months longer, and having received information of some old burial caves in the State of Coahuila, he went to the place, and notwithstanding the excessive heat and the many difficulties that beset him, he met with great success, returning with a large and beyond question the most important collection ever made in that portion of Mexico. As I hope to give a detailed account of this collection, in which Dr. Palmer's notes will be incorporated with descriptions and illustrations of the numerous objects obtained from the several caves as a special paper, I will only mention here that a number of skeletons were found done up in bundles just as they had been placed probably before the Spanish occupation of the country. As these caves had been entered by the nitre workers many of the human remains had been destroyed. Hundreds, and according to some reports thousands, of the bundles or "mummies" had been used as fuel, and it was therefore only

in the least accessible portions of the caves that the objects obtained by Dr. Palmer were found. In one case these were found under a deposit several inches thick consisting of the droppings of rodents; and in another cave a breccia, in which were thousands of bones of bats and small rodents, was found deposited over the human remains. The similarity of these bundles of human remains, or "mummies" as they are generally called, from the Mexican caves, to those which have been found in the caves of Kentucky and Tennessee, is of great interest.

As has been the case in all his explorations, Dr. PALMER procured such natural productions from the vicinity of the caves as would help in determining the material of which the old things were made, and we are thus enabled to exhibit the leaves, fibres and other vegetable productions from which the cloth, baskets and numerous other articles were constructed by the people who placed their dead in the caves.

To Dr. ABBOTT the Museum is indebted for many specimens obtained from New Jersey and from his correspondents in various places. At very small expense to the Museum, he has continued his explorations of the Trenton gravels, from which he has secured a number of implements. The interest in regard to this discovery has much increased during the past year; and while some individuals, who are not at all acquainted with the facts, have denied the actual discovery of stone implements, in place, in the gravel beds at Trenton, and others, apparently acting from a general unbelief in everything that bears at all upon the antiquity of man, have thought that there must be some mistake in regard to the age of the gravels, there is now no doubt in the minds of the few who have made a careful study of the gravel deposit at Trenton, of the accuracy of Dr. Abbott's work and the importance of his discoveries. Several geologists have, during the past season, investigated these deposits, particularly Mr. Lewis of Philadelphia and Mr. Wright of Andover, and as I understand the conclusions that have been reached, the Trenton implement-bearing gravel is a deposit resting on and against the Tertiary marine gravel, in the old flood plain at the bend of the river at Trenton. This more recent gravel has been brought down by successive torrents formed by the melting of glaciers far up the valley of the Delaware, which have cut through an old and very extensive moraine, bringing down an immense amount of material and

spreading it over the lower and wider part of the valley at the Trenton bend. These successive deposits have thus buried the implements lost by the palæolithic men who probably lived on the old Tertiary bluffs and hunted and fished along the valley and over this, in their time, constantly increasing gravel deposit. Thus the evidence seems conclusive that New Jersey was inhabited at the time of, and probably long before, the final dissolution of the last glacial epoch. How long that time is in years has not yet been determined, but the evidence seems at present unquestionable that in this way implements lost by man were buried below, at least, thirty feet of a gradually deposited gravel, and at nearly all levels from that depth to the present surface soil, where the same forms of implements are also found associated with others of the recent Indians. Some persons have stated that the implements have only been found in the gravel itself by Dr. Abbott and that in such an important matter corroborative testimony was desirable. Without for a moment admitting that there was any question in my mind as to the authenticity of the statements made by Dr. Abbott, I will here assert that others, including myself, have found implements in place in the gravel, and that at a recent meeting of the Boston Society of Natural History the whole subject was carefully discussed and the evidence supposed to be wanting by some as to the actual finding of specimens *in situ* in the gravel, was given in detail. Doubts have also been expressed by some persons as to the artificial character of the implements in question, but this is a matter that has always been so easy of proof by the study of specimens in the Museum, that it is only necessary to invite any doubter to come and see for himself. In the volume which Dr. Abbott is now carrying through the press there will be a portion devoted to the important subject of palæolithic man, and the whole question will be treated in detail with the help of Mr. H. C. Lewis of the Pennsylvania Geological Survey, who will give a chapter on the gravels of Trenton.

The work by Dr. Abbott, to which I have alluded, now nearly through the press, is entitled "Primitive Industry, or Illustrations of the Handiwork in Stone, Bone and Clay, of the native races of the Northern Atlantic Seaboard of America." The volume is based upon the collections in this Museum, and as about four hundred of the figures which it will contain were drawn from our specimens, it

will to a certain extent form an illustrated hand-book of a portion of the Museum.

To Mr. DAVID DODGE of Boston, we are indebted for a remarkable and interesting collection of rude stone implements from Wakefield in this state. These implements are of palæolithic forms and may indicate the existence at Wakefield of conditions somewhat like those at Trenton, particularly as the ploughed fields, in which many of the specimens were found by Mr. Dodge, are extensive deposits of gravel probably of glacial origin. Of course further and extensive examinations of this locality will be made, for unless the implements are actually found in the gravel itself, we cannot assign them to the palæolithic age, as in this country we have too many instances of the use of implements of palæolithic forms by the neolithic folk, to permit us to call such specimens as these from Wakefield unquestionably palæolithic, until their counterparts have been found in the gravel from which these may have been ploughed. The discovery of other specimens, similar to those found in the fields, associated with stone chips of all sizes, in an old deposit on a hill near the field, probably indicates a place where such implements were made.

Mr. Dodge was also so fortunate as to obtain a stone implement or ornament from a peat bog at Wakefield. This is of the type of the objects to which the term "bird-shaped" has been given, but it is not perforated with the two holes as is the case with most of these objects. It was found on the sand-bed under about seven feet of peat and is of great interest as the first stone implement, to my knowledge, that has been found under the peat in New England.

By the action of the Executive Committee of the ARCHÆOLOGICAL INSTITUTE OF AMERICA, the American collections obtained by Mr. BANDELIER, under the direction of the Institute, will be made over to the Museum as a permanent deposit. In fulfilment of this decision, we have already received the collection forwarded from Santa Fé, which contains the objects obtained by Mr. BANDELIER during his explorations of the sites of old Pueblos, particularly that of old Pecos on the Rio Grande, south of Santa Fé, and also a number of articles obtained from the people of the present Pueblos of Cochiti and San Domingo. After Mr. Bandelier's report is printed by the Institute, these specimens will be arranged, labelled and exhibited in the new case, now in process of construction, in

the hall with the rest of the Pueblo collections. This action of the Archæological Institute will probably be the means of securing to the Museum a number of valuable specimens, and certainly no more appropriate place exists for their arrangement and comparative study than in this Museum.

After passing several months on the Rio Grande, Mr. Bandelier has been, within the last month, sent by the Institute to coöperate with M. Charnay in the Lorillard explorations of Chiapas and Yucatan.

For an account of the other additions during the year I must refer to the list hereto annexed, from which it will be seen that over four thousand entries have been made in the catalogue since the last meeting.

With the object of making the Museum library of ready access to workers in the Museum, and to such as may consult it for special purposes, I have thought it best to begin the work while the library is still small, and have therefore removed to the upper room all the volumes and pamphlets that did not relate to archæology, ethnology, philology and human anatomy, the four great divisions of Anthropology to which the work in the Museum is specially directed.

The remaining volumes and pamphlets have been catalogued on cards under the names of their authors, and the analysis of the volumes, with proper cross references to special subjects, is now being made. Already about eight hundred catalogue cards have been prepared and placed in alphabetical order in the little catalogue cabinet purchased for that purpose. As it was in many ways advisable to have this work done by one familiar with the system of cataloguing adopted at the College Library, Miss ROBBINS, a former assistant at the Library, has been employed for the purpose and has faithfully performed her duties. To Mr. SCUDDER the Assistant Librarian, in charge of the work of cataloguing at the College Library, I am indebted for advice and assistance in this work.

By an arrangement with Mr. WINSOR, the books received at the Museum are recorded in the Library Bulletin in common with the other department libraries of the University, and for this reason it will not be necessary to give in this report the titles of the books received during the past year, as has been the custom heretofore.

Since your last meeting, new cases have been put up on the floor

and gallery of the southern room of the second story and in the adjoining hall, and also the new central case in the northern room below. Mr. WILLSON, who has continued to perform this important work, is now engaged in building those on the second northern gallery, which will soon be completed. In this work Mr. CHICK has given much assistance; and all the glazing, painting and oiling, and the fitting of the shelves has been done by him, at a considerable saving to the Museum.

Mr. CHICK has also proved a most efficient assistant in various other ways, as well as in taking charge of the building. I may particularly mention that the framing of all the pictures and photographs about the building has been done by him; and it is a pleasure to acknowledge the many little ways in which he has helped in the general work of the Museum, and the faithful manner in which he has performed his duties with due consideration to economy.

Mr. CARR has continued his voluntary services during the year and has given me much assistance, particularly in the work of cataloguing the numerous additions to the Museum. In addition to the preparation of the paper I have already mentioned on the "Crania of New England Indians." Mr. Carr's special studies for the past year have been, on the historical evidence of the connection of the tribes of recent Indians with the "moundbuilders." This laborious work of consulting all the old authors and comparing their accounts of the customs of the Indians during the first settlement of the country with the results obtained from archaeological work in the field, has been very much needed for the proper understanding of the connections of the various Indian tribes, and will probably be productive of many good results. It will at all events put a check on too hasty generalizations as to the great antiquity of *all* the mounds and earthworks in North America, and will give to the Indian a much higher place in the scale of civilization than it has usually been his lot to receive. It will, however, still remain for archaeology, craniology and philology to determine the racial connections of the Indian tribes with each other, and to trace their migrations through past times and their connections with peoples of distant lands.

Miss SMITH has been regularly employed as an assistant in the Museum during the past year and has become so familiar with the duties of her position and the general work in the Museum, as to

render the continuation of her faithful services very important to the welfare of the collections, which are now over four times the size they were when they first came under my charge and about three times as large as when removed from the old rooms in Boylston Hall; consequently the labor for their proper care and arrangement has greatly increased during the past few years.

In closing this brief summary for the year, I cannot refrain from expressing my regrets that we have been forced to discontinue the explorations, which, thanks to the small accumulations during the early years of the Museum, we were able to carry on for a short time with such success. Should you make the appropriations for the coming year in accordance with the scheme which I have made out after consultation with the auditor of your board, it will leave only \$1158 for the general expenses for the year, including the printing of the annual report. Of course, while this will enable the work to go on and secure the proper care and arrangement of the collections, as during the past year, it will not allow of any expenditure for collections and explorations, or for the publication of special papers.

The large amount of valuable and authentic material received from the special explorations by the Museum, as shown by the contents of this room alone,⁴ and the important facts relating to the past of our country, which have been obtained, are certainly sufficient inducements to continue the American explorations if the means can be secured. It is only by extensive, thorough and systematic work of this character, that we can hope to trace the migrations of tribes and races over our continent and follow them back in time. The continuation of the explorations so well begun by the Museum is also most desirable at this time; for since the great increase in the number of persons who are more or less interested in making collections, the antiquities of the country are being explored at random, and often in a very superficial and unsatisfactory manner, while foreign institutions have their agents here who compete with wealthy private collectors and pay high prices for all that can be obtained, thus encouraging the hunter for curiosities as well as the maker of fraudulent specimens. Of

⁴ The room here referred to is the northern one on the first floor, which contains the large and important collections from the mounds of the United States, while on the gallery are those from Central America and Mexico. To these several collections special attention has been called in this and the two preceding reports.

course the time is not distant, when little that is undisturbed, either by the plough or the general collector, will remain to reward the careful student for his pains. Under these circumstances, it appears to me that the time has come when an appeal for aid to enable the Museum to enter upon more extended work would meet with success. I am the more inclined to make this statement as my own feeble presentation of the subject to various persons, during the past winter, leads me to hope that an appeal to the public would meet with the wished-for reception if it were started under your sanction and direction, with a plain statement of the necessity of increased means for the work which the Museum is so well prepared to perform, as well as of the security it offers as a place for the final deposit of the treasures obtained and for the lasting care that its present means provide for all that is received. The fact that this Museum was founded especially for the preservation of collections, and the study of American Archaeology and Ethnology, and that it is the only one of its character in the country, will, when properly made known to the public, unquestionably have the effect desired, if at the same time the general impression of its great wealth can be dispelled.

Respectfully submitted,

F. W. PUTNAM,

Curator.

PEABODY MUSEUM AMERICAN ARCHEOLOGY AND ETHNOLOGY,
Cambridge, Mass., March 7, 1881.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1880.

ADDITIONS TO THE MUSEUM.

20550—20560. Fragments of pottery from the McElmo Cañon and the ruins on the Animas river, Colorado Territory.—Collected and presented by Mr. WM. F. MORGAN.

20561—20878. A large and varied assortment of stone implements of the usual Ohio valley patterns, from Franklin, Pickaway, Ross, Clinton, Fairfield, Van Wert, Warren, Lawrence, Clarke and Butler Counties, Ohio; and from Boone and Kenton Counties, Kentucky; stone ornaments from Franklin, Ross, Pickaway, Licking, Hamilton and Clermont Counties, Ohio, and from Campbell County, Kentucky; stone pipes from Franklin County, Ohio, and the banks of Cedar river, Iowa, and also casts of others,—one in form of a duck, from Ohio, and another from Westmoreland Co., Penn.; implements of hematite from Franklin and Pickaway Counties, Ohio; fragments of pottery from Franklin Co., Ohio, and from Boone Co., Ky; a stone spearpoint from New Haven, Conn.; two bronze celts from Great Britain, and iron arrowheads made by the modern Indians. Embraced in this collection are stone implements and ornaments from mounds in Delaware, Clermont, Butler, Fairfield, and Franklin Counties, Ohio, from Boone and Campbell Counties, Ky., and also from a mound in Virginia; a stone pipe, hematite celt, and sheet of mica from mounds, respectively, in Franklin, Ross and Delaware Counties, Ohio; a cup stone, a perforated tooth, and a chunke stone from mounds in Boone and Mason Counties, Ky.; stone pipe and copper earring from one in Indiana, shell beads from one near Jamestown, Va., and a stone celt and spearpoint from another near Andalusia, Ill.—BY PURCHASE from R. B. COLLIER.

20879—20926. A collection of stone implements and ornaments from Butler Co., Ohio; a stone ornament, and an implement of slate with the figures 1745 carved on it since its discovery, from a mound in the same County.—Collected by R. T. SHEPHERD, and presented by Dr. C. C. ABBOTT.

20927. A perfect stone knife, of semilunar form, from East Jaffray, N. H.—Collected and presented by C. J. MASON.

20928. Indian doll, representing a squaw with a child on her back.—Presented by Miss ANNE P. SHALER.

20929—20931. Grooved stone axe, flint points, and worked piece of antler from Hamilton, Ohio.—Collected and presented by W. S. KENNEDY.

20932. Grooved stone axe found in Quincy Street, Cambridge.—Collected and presented by Dr. H. A. HAGEN.

20933—20944. Earthen pot and fragments of pottery; perforated shells; bears' teeth; implements of bone and stone, and pieces of antler, one worked and another charred, from an ancient cemetery at Madisonville, Ohio.—Collected and presented by Dr. F. W. LANGDON.

20945—20956. Implements of bone, stone and horn, and perforated shells, from the same cemetery.—Collected and presented by Dr. C. L. Metz.

20957. Stone knife from Brookville, Ind.—Collected and presented by Dr. F. W. LANGDON.

20958—22357. This fine collection, covering 1399 distinct entries in the catalogue for this year, and taken almost entirely from mounds and graves along the St. Francis river, in Cross and other counties of northeastern Arkansas, is composed of earthen vessels of the kind usually denominated "Missouri pottery," and of implements and ornaments of stone, bone, horn, shell, and copper, with a few articles made of cannel coal, the use of which is unknown. There are also a number of human crania, and other bones both human and animal, some of which show marks of fire. As this collection is spoken of at some length on a preceding page, it is unnecessary here, to do more than call attention to the great predominance of articles of pottery, and the comparative scarcity of those of stone and other materials. Among the former there are over eight hundred specimens of jars, pots, bottles, etc., of the same general forms and patterns as those found in the mounds of southeastern Missouri and in the stone graves of Tennessee. Eighty-one of them are more or less ornamented in colors, and in one hundred and six the figure of a bird or of some other animal—usually a fish or a frog—is rudely imitated. It is worthy of note that in this large collection there is not a single attempt to represent the human figure, the nearest and in fact the only approach to it, being in the vase elsewhere described, which is in the shape of a human head. In this respect it differs from similar collections from Missouri and Tennessee, in which there are always a considerable number of vessels in human form. Another noteworthy fact is the absence of stone pipes, though there are twenty of clay. As these pipes were undoubtedly the work of the people who were buried in these mounds, it seems fair to conclude that the moundbuilders, taken as a whole, did not limit themselves in the use of the materials out of which they made their pipes, any more than they did in the shape and form which they gave them. Included in this collection, but occupying only seven numbers in the catalogue, are a few stone implements from the mounds and graves in Tennessee. Among them are three of the large masses of chipped flint, of which mention has been previously made, a spindle-whorl, arrowhead, and drills.—Explorations conducted for the Museum by EDWIN CURTIS.

22358—22475. Japanese vases, bowls and jars, of porcelain and pottery, some of which date back from one to two thousand years;

stone amulets or ornaments, a bow-drill with whorl, masks, animal heads of grotesque form carved in wood; articles of wearing apparel, such as are used to-day by different classes of Japanese; and models of the interiors of parlor and a kitchen, also of a junk, with specimens of native wood, all from Japan. With these there are also an Aino poisoned arrow, sheath-knife, carved moustache sticks, and a wooden spoon.—Collected by Prof. E. S. MORSE, acting for the Museum.

22476—22488. Saw made of bottle glass from King George's Sound, west Australia, collected by Professor LIVERSEDGE; fine stone celts, formerly belonging to the Finley collection, from Greece; rude stone implements from Abbeville and St. Acheul, France; grooved stone hammer from Alderley Edge, implement of quartzite from Robin Hood Cave, flint flakes from Church-hole Cave, and casts of implements (figured in "Early Man in Britain") from the upper and lower stages of Robin Hood cave, England.—Presented by Prof. W. BOYD DAWKINS of Manchester, England.

22489. Carved ornament, such as worn on the hair by warriors of the Marquesas Islands, made from a human arm bone, found in a well at Scarboro, Maine.—Collected by EDWARD TOMPSON and presented by the late J. WINGATE THORNTON.

22490—22491. Casts of bone ornaments precisely like the above from the Marquesas Islands, and also human hair from an anklet from the same Islands.—Collected and presented by Mr. C. D. VOY.

22492. Kappa cloth from the Hawaiian Islands.—Collected by the U. S. Exploring Expedition under Commodore WILKES and presented by the BOSTON SOCIETY OF NATURAL HISTORY.

22493. Cast of flint implement from the lower cave earth in Robin Hood Cave, England.—Collected and presented by Prof. W. BOYD DAWKINS.

22494—22495. Hand-made wire cloth from Nijnii Novgorod—Collected by the Hon. G. V. FOX, and presented by the MUSEUM OF COMPARATIVE ZOOLOGY.

22496—22499. Casts of fragments of pottery, of an earthen cylinder and tablet, and also of human tibiae from the shell heaps at Omori, Japan. Types of specimens figured by Prof. E. S. MORSE.—Presented by the IMPERIAL UNIVERSITY OF TOKIO.

22500—22642. Earthen vases, some of them ornamented in colors, and a mask and mould of the same material, an "idol" in lava, human bones, stone implements, and beads and ornaments of jadeite, from places around Lake Nicaragua; shell ornament from the cave at Cucirizna; stone implements and ornaments, piece of charred wood, human and animal bones, earthen vessels and toys, some of them painted, small human figures in terra cotta, and animal heads of the same material, from burial mounds on the plain west of Tola, Nicaragua.—Explorations of Dr. EARL FLINT, conducted for the Museum.

22643. Wooden seats from Brazil.—Collected by the HASSLER EXPEDITION and presented by the MUSEUM OF COMPARATIVE ZOOLOGY.

22644—22911. Six "mummies" or dried human bodies with the wrap-

pings from burial caves in Coahuila, Mexico. In the bundles containing the human skeletons were also implements and ornaments. Among these are feather ornaments, shell beads, and necklace of snakes' vertebrae; baskets, pieces of matting, wicker work, nets, cords, twine, and cloth, some of which is ornamented in colored figures, all made from the fibre of the Agave: shell ornaments; stone implements, among them several knives fastened in wooden handles; braided sandals; circular pads to protect the head when carrying burdens, made of grass and Agave fibre. A number of crania, and articles similar to those mentioned above, were found upon the floor of the caves, apparently from other bundles in which bodies were wrapped. Besides these articles found in the caves and which will form the subject for a special paper, Dr. Palmer obtained specimens of the Agave which seems to have played as prominent a part in the domestic economy of these people, as it does in that of the Indians of to-day; also a corn husker, hat, leather sandals, water bottle, rattles, and a crown of artificial flowers, such as are now made and used by the Indians of Coahuila. He was also fortunate enough to secure an old Spanish olive jar which is an exact counterpart of one, noticed in a former report, which was from a mound in Florida. There is also in this collection a large and interesting series of stone implements from Georgetown, Texas, and a few fragments of pottery, two stone knives and some broken implements of the same material from Longview, Texas, the latter collected by Mr. JOHN ALLEN WARE of that place. — Explorations conducted for the Museum by Dr. EDWARD PALMER.

22912—22917. Two stone yokes, and two human faces in profile, carved in stone, and fragments of pottery probably from Mexico. — Collected by the HASSLER EXPEDITION and presented by the MUSEUM OF COMPARATIVE ZOOLOGY.

22918—22973. Crania and other human and animal bones, some showing marks of fire, fragments of pottery, with painted, stamped, and incised ornamentation; shells, ornaments of silver, brass and copper, glass beads, stone celts and arrowheads, iron tomahawk and pieces of bog iron from mounds in Florida. — Exploration conducted for the Museum by Dr. DAVID MACK.

22974—22975. Mummied human head and foot, from the tombs at Memphis, Egypt. — BY PURCHASE.

22976—22980. Cups, pipe, osirids, and an earthen lamp from Egypt. — Collected and presented by Mrs. S. D. WARREN.

22981. Carved stone head from Idalium.

22982. Iron tomahawk from Crawford, Miss. — Presented by Mr. A. F. BERLIN.

22983. Stone sinker from Saugus, Mass. — BY EXCHANGE.

22984. A small human face carved on stone, from Wellfleet, Mass. — Collected and presented by Rev. B. F. DE COSTA.

22985. Stone pipe,¹ similar in execution and material to those from the

¹ This pipe is figured and an account of it is given on page 324 of Dr. Abbott's work entitled "Primitive Industry or Illustrations of the Handiwork in Stone, Bone and Clay of the Native Races of the Northern Atlantic Seaboard of America."

Northwest coast, found at a depth of two to three feet in North Carver, Plymouth Co., Mass. — BY PURCHASE.

22986 — 23006. Stone implements from Lebanon Co., Penn. — Collected and presented by H. L. ELLIG.

23007. Grooved stone axe from Washington Co., Ark. — Collected by Midshipman J. C. DRAKE, U. S. N., and presented by Prof. CHARLES E. MUNROE.

23008 — 23014. Fragments of steatite pots and stone implements from Oxford Co., North Carolina.—Collected and presented by Mr. W. R. CABOT.

23015 — 23019. Stone implements from Castorland Station, Lewis Co., N. Y.— Collected and presented by Mr. W. HUDSON STEPHENS.

23020 — 23022. Birch bark panier from Lake Superior, "squeezes" from the "tomb of a priest" at Thebes, Egypt, and model of a steamboat, made of pith by a Nubian child.—Collected and presented by Mrs. ASA GRAY.

23023. Calvarium and human bones from Main St., Owego, N. Y.— Collected and presented by Prof. R. PUMPELLY.

23024. Clay pipe from St. Lucia, W. I.—Collected and presented by Mr. F. OBER.

23025. Cast of the "Gass tablet." — Presented by the DAVENPORT ACADEMY OF SCIENCES.

23026. Fragment of Zulu pottery from South Africa.—Presented by Mrs. ISABELLA JAMES.

23027—23030. Cranium and jaw from Silver Creek, Iowa, and fragments of pottery from ancient Indian lodges in Mills Co., Iowa.—Collected and presented by Mr. S. V. PROUDFIT.

23031. Flint chips and broken arrowhead from Fort Sisseton, Dakota Ter.—Collected and presented by Mr. A. GECKS.

23032 — 23034. Notched and painted sticks left by the Pueblo Indians, on Mt. Taylor, New Mexico. — Collected and presented by Mr. G. THOMPSON.

23035 — 23062. Fragments of pottery, showing different methods of ornamentation, from Plattsburgh, N. Y. — Collected and presented by Dr. D. S. KELLOGG.

23063 — 23071. Earthen vases and stands from megalithic cists in Periakulam, Madura district, South India.— Collected by the late Rev. D. C. SCUDDER and presented by Mr. S. H. SCUDDER.

23072 — 23073. Mats probably from West Africa. — Collected by the late Dr. CHARLES PICKERING and presented by Mrs. PICKERING.

23074 — 23075. Casts of steatite dishes in the Amherst Museum. — Presented by Prof. E. HITCHCOCK.

23076 — 23084. Several crania, heads, sheath-knife, human hair, and fragment of cloth ornamented with buttons, belonging to Dull Knife's band of Cheyenne Indians, who were killed in 1879.—Collected by S. W. GARMAN, and presented by the MUSEUM OF COMPARATIVE ZOÖLOGY.

23085 — 23092. Two mummied heads from Thebes, Egypt.—Collected by the late JOHN LOWELL, JR.; Kappa cloth, and the material from which

it is made, also a pounder or instrument used in making it, from the Hawaiian Islands; grass cloth and a cap probably of African manufacture.—Presented by the BOSTON SOCIETY OF NATURAL HISTORY.

23093—23098. Crania and perforated shells from mounds on the bluff near the mouth of the Illinois river,² and a fragment of a skull from a mound in St. Charles Co., Mo.—Collected and presented by the Hon. WM. McADAMS.

23099—23114. Sixteen French crania.—Presented by the SOCIÉTÉ D'ANTHROPOLOGIE of Paris.

23115. Carib table from Salibria, Island of Dominica.—Collected by Mr. S. W. GARMAN.—By PURCHASE.

23116. Small dish with human head, made in imitation of similar articles from the mounds in southeastern Missouri.—Presented by Dr. F. F. HILDER.

23117—23192. Human bones, some burned; charcoal; shells, and implements of bone and stone from Battle Mound in Fairfield Co., Ohio; stone implements of the usual patterns from the surface in different sections of Ohio: a celt made of limonite from Ironton, Ohio, collected by the Hon. JOHN CAMPBELL; an oval stone cup from Beach City, Ohio, collected by Mr. JOSEPH GETTY; a spearpoint from Newark, Ohio, collected by Judge BUCKINGHAM; human bones and fragments of stamped pottery from Fort George Island, Florida, collected by Mr. CUTLER W. ANDREWS; human bones, shell beads, and fragments of pottery from St. John's river, Florida, opposite the light house, collected by Miss CLARA L. ANDREWS.—Exploration conducted for the Museum by the late Prof. E. B. ANDREWS.

23193—23547. A collection of over three hundred crania from Ancon and Pacasmayo, Peru, with a few other human bones and specimens of hair, collected by the HASSLER EXPEDITION, under the late Prof. LOUIS AGASSIZ; cranium from Tierra del Fuego, of doubtful nationality, collected on the same expedition; fifteen crania from the Hawaiian Islands, collected by the late Dr. C. F. WINSLOW; crania and stone celts from India, collected by Mr. W. THEOBALD, JR.; an imperfect skeleton from Christchurch, New Zealand, collected by Dr. J. HAAST; human bones from Hayti, W. I., collected by Dr. D. F. WEINLAND; human bones from McGregor, Iowa; a human skeleton of unknown origin, casts of the crania of individuals belonging to thirteen different peoples.—Presented by the MUSEUM OF COMPARATIVE ZOOLOGY.

23548—23560. Grooved stone axe from Dover, Delaware; a collection of stone implements from Little Creek, Kent Co., Del., and fragments of pottery from shell mounds at Cape Henlopen, collected and presented by Mr. H. R. BENNETT.

23561—23764. A collection of stone implements and ornaments and fragments of pipes and other articles of pottery from Trenton, Crosswicks Creek and Lake Hopateong, New Jersey. In it are a series of palæolithics found at different depths, and twenty-seven grooved stone axes, two

² These crania are mentioned in Mr. McAdams' paper on ancient mounds in Illinois, *Proc. A. A. S.* Vol. xxix.

stone mortars, four unfinished ornamental axes, and a large and varied collection of stone implements of jasper, quartz and argillite, such as are usually found on the surface in New Jersey.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

23765 — 23775. Stone implements of the usual New Jersey patterns, and fragments of pottery from Trenton.—Collected and presented by RICHARD M. ABBOTT.

23776 — 23858. Grooved stone axe from Bainbridge, Penn., and stone implements and a brass arrowhead from Lancaster Co., Penn.—Collected by the late Dr. S. S. HALDEMAN; a large series of stone implements and ornaments of the usual Ohio valley forms, from Butler Co., Ohio, together with flint points from California, Iowa, Indiana and Kentucky, all collected by Mr. R. T. SHEPHERD of Monroe, Ohio; a small carved stone from Burlington Co., New Jersey, collected by Mr. HERBERT COLEMAN.—Presented by Dr. C. C. ABBOTT.

23859 — 23869. Stone implements from Trenton, N. J., and fragments of pottery and stone knives, drills and arrowheads from Oswego, N. Y.—Collected and presented by Mrs. ERNEST INGERSOLL.

23870. Cast of a stone ornament from Cohestoga, Penn.—Collected by P. C. HILLER and presented by Dr. C. C. ABBOTT.

23871 — 23880. Flint points from a newly ploughed field near Saratoga Lake, N. Y.; stone arrowheads from Saratoga Springs, and a flint implement from the gravel (probably disturbed) one mile west of Saratoga Springs, N. Y.—Collected and presented by Lieut. Com. A. R. MCNAIR, U. S. Navy.

23881. Stone pipe with human face cut on it, from the surface near Pomeroy, Ohio.—Collected and presented by CHARLES DABNEY HORTON.

23882. Cranium from Battle Mound, Fairfield Co., Ohio.—Collected and presented by Mr. SAMUEL COURTRIGHT.

23883 — 23963. A large earthen jar and a portion of a bowl, ornamented in colors, two small, stone idols—one representing a puma and said to be "Shyayaq," god of the chase; grooved and notched stone axes, and flakes of obsidian and chalcedony from the Pueblo of Cochiti and neighborhood; turquoise ear-rings, shell ornaments, fragments of pottery—some of European make—obsidian chips, stone hammers and grinding stones (*manos*), from the pueblo of Santo Domingo; fragments of different kinds of pottery, obsidian chips and arrowheads, human and animal bones, metate and grinding stones, and specimens of clay, rock, timbers and the adobe mortar from the Pueblo of Pecos and vicinity.—Collected by Mr. AD. F. BANDELIER, and presented by the ARCHEOLOGICAL INSTITUTE OF AMERICA.

23964 — 24139. This valuable collection from ancient graves in Peru is especially rich in the number of "mummied" heads preserved in their original wrappings, and in the quantity and variety of the specimens of cotton and woollen cloth, and garments made from it. Many pieces of this cloth are elaborately ornamented with colored figures, both woven and embroidered. There are also several work baskets with their usual contents, such as needles, thread, and bunches of wool and cotton, and a

number of wooden implements, some of which were doubtless used in weaving. The collection also contains a number of large wooden implements for agricultural purposes. Among the other articles worthy of special notice, are cup-stones, pestles, and polishing stones; dolls made of pottery, ornaments of shell, feathers and copper, small silver disks from the mouths of mummies, gourd bottles and dishes, nets with corn, beans, nuts, and other articles of food; slings, club heads of copper and stone, and a tattooed arm.—Presented by Dr. W. STURGIS BIGELOW.

24140—24377. Pipes of Buffalo horn from Calcutta; knife from Morocco, wooden shoes from Holland; calabashes, ornamental boxes, cassava bread, and roasted plantains from Surinam; iron tomahawk-pipe from Nebraska; pipes made of catlinite from the Rocky Mountains; stone celts, gonges and grooved axes from Arizona, Dakota, Indiana, New Jersey, Maine and Massachusetts; stone knives, arrowheads and other stone implements from Nebraska, Ohio, Kentucky, Pennsylvania, New York, and numerous places in Massachusetts; arrowheads from a cave in western New York; polishing and hammer stones, stone sinkers pestles and perforated stones from different localities in Massachusetts; and a large collection of stone chips and implements, some of them very rude and resembling the 'turtle backs' of New Jersey, and other palæolithic forms, from the neighborhood of Wakefield, Mass. In this collection there is a bird-shaped "totem" of stone which was found six feet deep in a peat bog near Wakefield, and is interesting as being the only specimen in the Museum from the peat of New England.

DONORS TO THE LIBRARY.

- Cambridge Antiquarian Society.* Two pamphlets.³
Mr. Theo. S. Case. Twenty-six numbers of Review.
Prof. John Collett. One volume.
Dr. Charles L. Metz. Two pamphlets.
Mr. Charles F. Low. Pamphlet.
Hon. Lewis H. Morgan. Pamphlet.
Mr. Stephen Salisbury, Jr. One volume.
Dr. Emil Schmidt. Pamphlet.
Dr. C. C. Abbott. Two pamphlets.
Minnesota Historical Society. Nine reports, four numbers of the Collections.
Dr. H. C. Yarrow. One volume.
Rev. Horace C. Hovey. Pamphlet.
Archæological Society of Greece. Pamphlet.
Philosophical Society of Washington. Three volumes.
M. Leon De Rosny. Pamphlet.
Rev. E. C. Bolles. Pamphlet.
Prof. W. Boyd Dawkins. Four pamphlets.

³ The titles of Anthropological works received by the Museum are published in the list of additions to the libraries of the University, in the *Harvard University Bulletin*,

Gesellschaft für pommersche Geschichte und Alterthumskunde, Stettin, Prussia. Four numbers of Journal.

Gesellschaft für Geschichte und Alterthumskunde, der ostseeprovinzen Russlands. Pamphlet.

President H. Kato, University of Tokio. One volume.

Providence Public Library. Report.

Mr. Charles Henry Hart. Two pamphlets.

Smithsonian Institution. Three volumes.

Archæological Institute of America. Report.

Academy of Science of St. Louis. One volume, one pamphlet.

Metropolitan Museum of Art. Six reports, four pamphlets.

Trustees of the Astor Library. Report.

American Chemical Society. Journal.

Dr. Albert S. Gatschet. Three pamphlets.

Missouri Historical Society. Three pamphlets.

American Antiquarian Society. Two pamphlets.

Ministère de l'Instruction publique, Paris. Four volumes.

Mr. Alexander Agassiz. Two volumes, five pamphlets.

Essex Institute. Seven numbers of Bulletin, two pamphlets.

Prof. O. T. Mason. Fourteen pamphlets.

Trustees of the Museum of Fine Arts. Two reports.

Prof. W. H. Flower. Five pamphlets.

Cincinnati Society of Natural History. Nine numbers of Journal of the Society.

Department of the Interior. Four volumes, six pamphlets.

Mr. Robert Clarke. One volume.

Anthropological Society of Great Britain and Ireland. Four numbers of Journal.

Dumfriesshire and Galloway Scientific and Natural History Society. One number of its Journal.

L'Académie d'Archéologie de Belgique. Thirteen volumes of annals, sixteen numbers of Bulletin, and one pamphlet.

Dr. Samuel A. Green. One pamphlet.

Col. Garrick Mallery. One volume.

Prof. J. D. Whitney. Two volumes.

Museum of Wesleyan University. Report.

Western Reserve and Northern Ohio Historical Society. Seventeen pamphlets.

Mr. E. T. Nelson. Pamphlet.

Mr. W. J. McGee. Pamphlet.

Mrs. S. S. Haldeman. Pamphlet.

Rev. B. F. De Costa. Pamphlet.

Marquis de Nadaillac. Two volumes.

Harvard College Library. Three pamphlets.

Mr. Alfred R. C. Selwyn. One volume.

State Historical Society of Wisconsin. Report.

Prof. N. H. Winchell. One volume.

Münchener Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.
Journal.

Prof. W. H. Haynes. Two volumes, one pamphlet.

Naturhistorisches Museum zu Braunschweig. Pamphlet.

Mr. Justin Winsor. One volume.

Mr. E. A. Conklin. Pamphlet.

Geological Survey of Canada. One volume.

Prof. Asa Gray. One hundred and twenty-four pamphlets.

Société d' Anthropologie de Paris. Twenty volumes and three numbers of Bulletins, General Index, Volumes I-VI, four volumes Memoirs, three numbers Revue, and two other volumes.

Col. C. C. Jones, Jr. One pamphlet.

Prof. E. S. Morse. Four pamphlets.

Mr. F. W. Putnam. Two volumes, nine pamphlets.

Wisconsin Natural History Society. Two pamphlets.

Società Italiana di Anthropologia Etnologia, Episcologia Comparata. Five volumes.

Editor of the Scientific American. Paper for the year.

Dr. Edward Palmer. Six pamphlets.

Novian Scotian Institute of Natural Science. One volume.

Unknown. One pamphlet.

Dr. C. C. Abbott. Five photographs.

Mr. J. Thomas Brown. One photograph.

Mr. S. V. Proudfit. One photograph.

Dr. Edward Palmer. Eight photographs, ten lithographs.

Army Medical Museum. Eight photographs.

Dr. R. J. Farquharson. One photograph.

Maj. J. W. Powell. Eighty-two photographs.

Mr. W. L. Nicholson. Two post-route maps.

S. M. Luther. Three photographs.

Dr. P. R. Hoy. Four photographs.

Davenport Academy of Science. Six photographs.

Miss Margaretta Bowles. Archæological map of Portsmouth, Kentucky.

By Purchase. Twenty volumes, ten serials, eight volumes, in eighty-seven parts, of Japanese books, map of Japan, thirty-one photographs.

REPORT OF THE TREASURER.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology in connection with Harvard University:

STEPHEN SALISBURY, Treasurer, respectfully presents his Fourteenth Annual Report:—

The Treasurer has in his keeping Thirty Massachusetts Coast Defence Specie Registered Notes, each for \$5,000, dated July 1, 1863, due July 1, 1883, the gift of George Peabody, Esq., to this Museum, viz.:—

Nine Notes of \$5,000, No. 45 to No. 54, belonging to Collection Fund.
 Nine Notes of \$5,000, No. 55 to No. 63, belonging to Professor Fund.
 Twelve Notes of \$5,000, No. 64 to No. 75, belonging to Building Fund.

The Treasurer for Collection Fund is charged with,

Feb. 4, 1880, balance of account	\$1250 00
July 6, 1880, 6 months' Interest on Mass. 5 per cent. Notes to 1st	1125 00
July 6, 1880, 6 months' Interest on Mass. 5 per cent. Notes, Professor Fund	1125 00
Jan. 4, 1881, 6 months' Interest on Mass. 5 per cent. Notes to 1st	1125 00
Jan. 4, 1881, 6 months' Interest on Mass. 5 per cent. Notes, Professor Fund	1125 00
	\$5750 00

And the Treasurer for Collection Fund is credited with,

Feb. 18, 1880, paid F. W. Putnam, Curator, by vote of Trustees	\$1250 00
July 21, 1880, paid F. W. Putnam, Curator, by vote of Trustees	2250 00
Jan. 3, 1881, paid F. W. Putnam, Curator, by vote of Trustees	2250 00
	\$5750 00

The Treasurer for Building Fund is charged with,

Feb. 4, 1880, balance of account	\$ 500 00
July 6, 1880, 6 months' Interest on Mass. 5 per cent. Notes to 1st	1500 00
Jan. 3, 1881, 6 months' Interest on Mass. 5 per cent. Notes to 1st	1500 00
	\$3500 00

And the Treasurer for Building Fund is credited with,

Feb. 18, 1880, paid F. W. Putnam, Curator, by vote of Trustees	\$ 500 00
July 21, 1880, paid F. W. Putnam, Curator, by vote of Trustees	1500 00
Jan. 3, 1881, paid F. W. Putnam, Curator, by vote of Trustees	1500 00
	\$3500 00

MARCH 7, 1881.

STEPHEN SALISBURY, *Treasurer.*

I certify that the above Report of Stephen Salisbury, Treasurer, is well vouched and truly stated, and the thirty Mass. 5 per cent. Specie Notes registered, each for \$5,000, are in the possession of the Treasurer.

SAMUEL F. HAVEN, *Auditor.*

March 3, 1881.

CASH ACCOUNT

Dr.

F. W. PUTNAM, *Curator, in Account with*

1880-81.

To Building Fund.

Balance on hand from last account	\$648 14	
Received from Stephen Salisbury, Treasurer	3500 00	
Received from Lambert Bros., allowance on glass	1 88	
Museum Fund, payment of amount advanced on last account	644 02	
	<hr/>	\$4794 04

To Museum Fund.

Received from Stephen Salisbury, Treasurer	\$5750 00	
From Building Fund, on account cases made 1868-74	644 02	
From Building Fund, for library cabinet	8 50	
From Woman's Educational Assoc., expenses of lecture	5 00	
From Reports sold	18 88	
From a friend for explorations	75 00	
	<hr/>	6501 40

\$11,295 44

OF THE CURATOR.

Peabody Museum of American Archaeology and Ethnology.

Cr.

1880-81.

By Building Fund.

Paid Museum Fund, on account of cases made from 1868-74 . . .	\$644 02	
Paid Museum Fund, for library cabinet	8 50	
Cases, stock and labor	3210 58	
200 wooden trays (drawers under cases)	30 00	
72 chairs	35 00	
Repairing plastering	30 87	
Incidentals and materials used	64 60	
		\$4023 57
Balance, cash on hand to new account		770 47
		<u>4794 04</u>

By Museum Fund.

Paid Building Fund amount advanced on last account	\$644 02	
Explorations and collections	1075 10	
Library, books, labels and cataloguing	59 09	
Water tax, two years	50 00	
Express, postage and telegraph	358 74	
Drawings and illustrations	53 50	
Printing 12th and 13th Reports	603 45	
Paper, envelopes and labels	21 60	
Mounting idol from Nicaragua and Palenque tablet	36 87	
Cement	8 00	
Fuel	11 00	
Incidentals	43 02	
Salaries	3379 00	
		6343 39
Balance, cash on hand to new account		158 01
		<u>6501 40</u>

\$11,295 44

I have examined this account, with the vouchers, and find it correct.

THEODORE LYMAN.

Feb. 26, 1881.



FIFTEENTH ANNUAL REPORT
OF THE TRUSTEES
OF THE
PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY.

PRESENTED TO THE PRESIDENT AND FELLOWS OF
HARVARD COLLEGE, JUNE, 1882.

VOL. III. No. 2.

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PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY
IN CONNECTION WITH
HARVARD UNIVERSITY.

FOUNDED BY GEORGE PEABODY, OCTOBER 8, 1866.

TRUSTEES.

- ROBERT C. WINTHROP, Boston, 1866. *Chairman.*
CHARLES FRANCIS ADAMS, Quincy, 1866; *resigned*, 1881.
FRANCIS PEABODY, Salem, 1866; *deceased*, 1867.
STEPHEN SALISBURY, Worcester, 1866. *Treasurer*, 1866-1881.
ASA GRAY, Cambridge, 1866. *Pro tempore Curator of the Museum*, 1874.
JEFFRIES WYMAN, Cambridge, 1866; *deceased* 1874. *Curator of the Museum*, 1866-1874.
GEORGE PEABODY RUSSELL, Salem, 1866; *resigned*, 1876. *Secretary*, 1866-1873.
HENRY WHEATLAND, Salem, 1867. Successor to Francis Peabody, as President of the Essex Institute. *Secretary*, 1873.
THOMAS T. BOUVÉ, Boston, 1874-1880. Successor to Jeffries Wyman, as President of the Boston Society of Natural History.
THEODORE LYMAN, Brookline, 1876. Successor to George Peabody Russell, by election. *Treasurer*, 1881-1882.
SAMUEL H. SCUDDER, Boston, 1880. Successor to Thomas T. Bouvé, as President of the Boston Society of Natural History.
JOHN C. PHILLIPS, Boston, 1881. Successor to Charles Francis Adams, by election. *Treasurer*, 1882.

OFFICERS OF THE MUSEUM.

- FREDERICK WARD PUTNAM, *Curator*, 1875.
LUCIEN CARR, *Assistant Curator*, 1877.
MISS JENNIE SMITH, *Assistant*, 1878.
MISS C. A. STUDLEY, *Assistant*, 1882.
EDWARD E. CHICK, *Assistant in charge of the Building*, 1878.

FIFTEENTH ANNUAL REPORT.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

THE Trustees of the Peabody Museum of American Archaeology and Ethnology herewith respectfully communicate to the President and Fellows of Harvard College, as their Fifteenth Annual Report, the Reports of their Curator and Treasurer presented at the Annual Meeting, February 24, 1882.

ROBERT C. WINTHROP,
STEPHEN SALISBURY,
ASA GRAY,
HENRY WHEATLAND,
THEODORE LYMAN,
SAMUEL H. SCUDDER,
JOHN C. PHILLIPS.

CAMBRIDGE,
JUNE 22, 1882.

ABSTRACT FROM THE RECORDS.

FRIDAY, FEBRUARY 24, 1882. The Annual Meeting of the Board of Trustees was held this day at noon, in the Museum, Cambridge. Present: Messrs. WINTHROP, SALISBURY, GRAY, LYMAN, SCUDDER, PHILLIPS, WHEATLAND and the CURATOR.

The Report of the TREASURER was read and accepted, and ordered to be printed as a part of the Fifteenth Annual Report of the Board.

MR. LYMAN stated that when he accepted the office of Treasurer at the last meeting it was with the understanding that he was only to hold the office temporarily. He therefore offered his resignation, which was accepted, and the thanks of the Board were voted for his efficient services during the past year.

On nomination of MR. LYMAN, MR. JOHN C. PHILLIPS was unanimously elected Treasurer.

MR. LYMAN called attention to the circular letter which had recently been issued by authority of the Board, requesting aid to enable the Museum to renew its explorations in America, and stated that several subscriptions had already been received in response.

The CURATOR presented his account of the expenditures for the year, which was accepted and ordered to be printed.

The CURATOR read his Annual Report, which was accepted and ordered to be printed.

The appropriations for the year were voted.

The Board then adjourned to meet on March 15.

THE ADJOURNED MEETING was held on March 15, 1882, at noon, at the American Academy of Arts and Sciences, Boston. Present: Messrs. WINTHROP, SALISBURY, GRAY, SCUDDER, PHILLIPS, WHEATLAND and the CURATOR.

The CURATOR reported a plan for proposed explorations, which was accepted, and it was voted that the TREASURER be authorized to pay the CURATOR twenty-five hundred and fifty dollars, the amount received to date from the subscriptions in aid of archæological research in America, to be expended in accordance with the accepted plan.

It was also voted that the TREASURER and MR. LYMAN be authorized to reinvest the funds of the Museum.

The Board then adjourned.

HENRY WHEATLAND,
Secretary.

REPORT OF THE TREASURER.

*To the Trustees of the Peabody Museum of American Archaeology and
Ethnology in connection with Harvard University:*

THEODORE LYMAN, Treasurer, respectfully presents the following Annual Report:—

The Treasurer has in his keeping Fifteen Massachusetts Coast Defence Specie Registered Notes, numbered 1 to 15, inclusive, each for \$10,000, dated July 1, 1863, due July 1, 1883, the gift of George Peabody, Esq., to this Museum.

He is charged with,

July 6, 1881, Six months' Interest on above to July 1,	\$3750 00
Jan. 12, 1882, Six months' Interest on above to Jan. 1,	3750 00
	<u>\$7500 00</u>

And is credited with,

July 6, 1881, Paid F. W. Putnam, Curator,	
For account of Building Fund,	\$1500 00
For account of Museum Fund,	2250 00
	<u>\$3750 00</u>
Jan. 12, 1882, Paid F. W. Putnam, Curator,	
For account of Building Fund,	\$1500 00
For account of Museum Fund,	2250 00
	<u>\$3750 00</u>
	<u>\$7500 00</u>

THEODORE LYMAN, *Treasurer.*

FEB. 24, 1882.

(49)

CASH ACCOUNT

Dr.

F. W. PUTNAM, *Curator, in Account with*

1881-82.

To Building Fund.

Balance on hand from last account	\$770 47	
Received from Theodore Lyman, Treasurer	3000 00	
	<hr/>	\$3770 47

To Museum Fund.

Balance on hand from last account	\$158 01	
From Building Fund, 2d payment account of cases made in 1868-74	600 00	
From Building Fund, part salary of E. E. Chick,	500 00	
Reports sold	32 70	
Received from Theodore Lyman, Treasurer	4500 00	
	<hr/>	5790 71

\$9561 18

OF THE CURATOR.

Cr.

Peabody Museum of American Archaeology and Ethnology.

1881-82.

By Building Fund.

Paid Museum Fund, 2d payment acct. cases 1868-74	\$600 00	
Flooring 1st Southern gallery	292 17	
Cases, stock and labor	1010 88	
Furniture, and materials used	56 80	
Part salary of E. E. Chick	500 00	
	<hr/>	\$2459 85
Balance, cash on hand to new account		1310 62
		<hr/>
		3770 47

By Museum Fund.

Explorations and collections	\$843 75	
Library, books, labels and cataloguing	43 47	
Stationery and ink	26 33	
Binding 278 copies of Reports, Vols. I and II.	123 60	
Stereotyping and Printing 14th Report	153 46	
Fuel and Gas	166 99	
Water Tax	25 00	
Express, postage and telephone	152 65	
Craniometrical instruments	21 35	
Caligraph	80 00	
Incidentals	50 09	
Salaries	3871 00	
	<hr/>	5557 69
Balance, cash on hand to new account		233 02
		<hr/>
		5790 71

\$9561 18

I have examined this account, with the vouchers, and find it correct.

THEODORE LYMAN.

Feb. 11, 1882.

In conformity with a vote passed at the Annual Meeting of the Board of Trustees in 1881, the following circular letter was issued in January, 1882.

ARCHÆOLOGICAL RESEARCH IN AMERICA.

IN 1866 Mr. George Peabody gave \$150,000 to found a Museum of American Archæology and Ethnology: stipulating in his instrument of trust that \$60,000 should be invested for accumulation as a building fund. In 1876, the Trustees began the erection of the first section of the building, on land given by Harvard College. This structure, which is one-fifth of the one contemplated, was completed two years later.

Since 1878 three rooms and their galleries together with the central hall have been provided with cases, and the large collections from North, Central, and South America, and the smaller collections from Egypt, Southern Africa, Asia, Australia and the Pacific Islands have been arranged in them. These rooms are now open free to visitors between the hours of nine and five. The large collections from Europe, particularly rich in objects illustrating the stone age of Denmark and Italy, and in interesting remains from the Swiss Lakes, are now in course of arrangement for the room which will be provided with cases in the spring.

The collections of human crania from all parts of the world, the numerous human skeletons, and the pathological specimens of prehistoric times, are already sufficient to fill the upper room and adjoining hall, and will be arranged as soon as cases are provided for the purpose.

The Trustees have thus secured to the public a fire-proof building, containing large and valuable collections, comprising several hundred thousand specimens, which are recorded under nearly thirty thousand distinct entries. These have been placed under proper care and arranged in accordance with the demands of modern anthropological science.

An instructive and attractive Museum has in this way been formed where, from time to time, free descriptive lectures are given by the Curator. To this Museum, students may come for special investigations, with the assurance that, so far as American

archæology is concerned, they have access to the most important collections that have been brought together, while the material for comparison with that of other parts of the world is not wanting. The opportunities afforded by the Museum for archæological and ethnological investigations have enabled its officers and other students to make a number of researches, accounts of which have been published in the Annual Reports of the Trustees, in Memoirs of Societies, in National and State Reports, and in various journals. It is not too much to say that the work done at the Museum, and under its direction, has had a marked influence on the methods of archæological and ethnological research in this country.

While the results attained are most satisfactory, it must be evident that the small income of \$4500 per annum, derived from the \$90,000 given by Mr. Peabody for the care and increase of the Museum, is now scarcely adequate for its care alone, and that the increase of the collections must depend entirely upon gifts of specimens, which, although large and important, are not such as will enable the Museum to hold its own in the rapidly increasing growth of the science for whose development it was founded — a growth which has far exceeded the anticipations of sixteen years ago.

The Trustees therefore ask your aid to enable them to renew the explorations in America, which were successfully begun under the direction of the first Curator, the late Dr. Jeffries Wyman, and continued with excellent results by his successor, the present Curator, Mr. F. W. Putnam, until the whole of the limited income was required for the increased expense of maintaining the growing collections.

The Trustees are the more urgent in asking for aid at this time, as they are satisfied of the importance and justice of the following statement made by the Curator in his last Annual Report :—

“The large amount of valuable and authentic material received from the special explorations by the Museum, and the important facts relating to the past of our country, which have been obtained, are certainly sufficient inducements to continue the American explorations, if the means can be secured. It is only by extensive, thorough and systematic work of this character, that we can hope to trace the migrations of tribes and nations over our continent and follow them back in time. The continuation of the explorations so well begun by the Museum is also most desirable at this time; for since the great increase in the number of persons

who are more or less interested in making collections, the antiquities of the country are being explored at random, and often in a very superficial and unsatisfactory manner, while foreign institutions have their agents here who compete with wealthy private collectors and pay high prices for all that can be obtained, thus encouraging the hunter for curiosities as well as the maker of fraudulent specimens. Of course the time is not distant, when little that is undisturbed either by the plough or the general collector, will remain to reward the careful student for his pains. Under these circumstances, it appears to me that the time has come when an appeal for aid to enable the Museum to enter upon more extended work would meet with success. I am the more inclined to make this statement, as my own feeble presentation of the subject to various persons leads me to hope that an appeal to the public would meet with the wished-for reception, if it were started under your sanction and direction, with a plain statement of the necessity of increased means for the work which the Museum is so well prepared to perform, as well as of the security it offers as a place for the final deposit of the treasures obtained and for the lasting care that its present means provide for all that is received. The fact that this Museum was founded especially for the preservation of collections, and the study of American Archæology and Ethnology, and that it is the only one of its character in the country, will, when properly made known to the public, unquestionably have the effect desired, if at the same time the general impression of its great wealth can be dispelled."

{ ROBERT C. WINTHROP,
 { STEPHEN SALISBURY,
 { ASA GRAY,
Trustees, { HENRY WHEATLAND,
 { THEODORE LYMAN,
 { SAMUEL H. SCUDDER,
 { JOHN C. PHILLIPS.

Contributions may be sent to THEODORE LYMAN, *Treasurer*,
 191 Commonwealth Avenue,
 Boston.

In answer to this circular the following subscriptions have already been received :

HON. STEPHEN SALISBURY, Worcester, Mass.	.	.	.	.	\$500 00
COL. THEODORE LYMAN, Brookline,	"	.	.	.	500 00
JOHN C. PHILLIPS, Esq., Boston,	"	.	.	.	500 00
MRS. AUGUSTUS HEMENWAY,	"	"	.	.	500 00
SAMUEL D. WARREN, Esq.,	"	"	.	.	500 00
MRS. GARDNER BREWER,	"	"	.	.	300 00
DR. C. A. WARE,	"	"	.	.	200 00
DR. R. M. HODGES,	"	"	.	.	100 00
MRS. G. H. SHAW,	"	"	.	.	100 00
HON. ROBERT C. WINTHROP,	"	"	.	.	100 00
WM. D. WEEDEN, Esq., Providence, R. I.	.	.	.	.	50 00
					<hr/>
					\$3350 00

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of Archæology and Ethnology:—

GENTLEMEN:—As is well known to you, and as is stated in the last report, the explorations, which for several years had been so successfully prosecuted by the Museum, were reluctantly suspended two years ago, but it is now probable that the means will soon be forthcoming for the renewal of field work, to a limited extent at least, as several friends of the Museum have generously headed a subscription paper for that purpose. Should our hopes be realized and a few thousand dollars be secured for immediate use in explorations, there is reason to believe that results equal in importance to those already attained will be the reward of those who may give their assistance in the important work of exploring the ancient remains of our continent, the interest in which is rapidly increasing as the facts revealed by careful explorations are made known.

The discontinuance of work in the field has, naturally, caused a large decrease in the number of specimens received at the Museum during the past year as compared with the receipts during the few years when the active explorations were in progress. While this falling off in receipts is very much to be regretted, we have the satisfaction of recording a number of gifts from friends in various parts of the country. For a notice of these in detail I must refer to the annexed list of additions, comprising the 1767 entries in the catalogue during the year, and only refer in particular to a few of the more prominent collections received.

To Prof. D. P. PENHALLOW, who was for several years in Japan, we are indebted for a valuable series of objects obtained from the Ainos of Yesso. Prof. Penhallow lived for some time with this interesting people and has generously given to the Museum the things which he obtained, including fire sticks, moustache sticks, a prayer stick, bow with poisoned arrows, knives and other ob-

jects of domestic use. A hand-loom with all its parts complete, having upon it a piece of cloth in process of weaving from a large skein of grass thread, is of especial interest for comparison with similar hand-looms from the Indians of Mexico, and various wooden implements from the ancient graves of Peru.

From Mr. H. R. BENNETT, we have received a collection of over two thousand stone implements which he gathered in Delaware. This collection is of particular importance from the fact that a large portion of it was obtained from the site of an old Indian village on Morgan's creek. One interesting lot is the first collection we have received from the shellheaps of Delaware. Among the other specimens, are several fine grooved axes, some having two grooves, similar to many of the stone axes from New Mexico and Arizona. A large axe of polished serpentine, a "bird totem," and a large lot of arrowpoints and chipped-stone knives are also worthy of particular mention, while the collection as a whole is of great interest in comparison with the twenty thousand or more specimens in the Abbott collection from New Jersey. Mr. Bennett has thus not only made the Museum the recipient of his valuable collection, but he proposes, in return for a proper prospective reciprocation on our part, to continue his collecting and give to the Museum all the specimens he may secure.

Dr. ABBOTT has continued to send to the Museum from time to time during the past year such lots of specimens as he could obtain at little or no expense, and, as will be seen by reference to the additions recorded under his name during the past year, we have received at a mere nominal expense many stone implements and other objects from New Jersey principally collected by himself, and also several lots from Ohio, Kentucky, and England, which he had received from his correspondents, thus showing his continued interest in the Museum and his desire to do all in his power in furtherance of its objects, and we must remember that all his labors are gratuitous.

In connection with Dr. Abbott's work I may call attention to the little pamphlet, which the Museum has distributed, containing the several papers read at the meeting of the Boston Society of Natural History, to which reference was made in the last report. At the meeting mentioned, Dr. Abbott and several other gentlemen, particularly interested in the subject of the discovery of implements in the gravel beds at Trenton, communicated their views

relating to the implements and the geological conditions under which they were found. As the Museum has been so thoroughly identified with this important subject, in connection with Dr. Abbott's discoveries, it seemed in every way proper that there should be issued to its correspondents a special edition of the pamphlet as a full statement of the facts and conclusions reached relating to the occurrence of palæolithic man on the Atlantic coast of North America.

I may also here mention the recent publication of Dr. Abbott's volume entitled "Primitive Industry." As nearly all the specimens figured in this work are in the Museum, it is to a considerable extent a hand-book of that portion of our collection relating to the archæology of the Eastern states. To all persons interested in the early history of man in America, as shown by his works in stone, bone and clay, this volume is of the first importance and will necessarily long be a standard work of reference.

During the past year, Mr. DODGE, acting as an agent for the Museum, has continued his collecting of the rude stone implements in the vicinity of Wakefield in this state, and has added largely to the collection from this old site. We now have specimens in every stage of manufacture, from the masses broken from the rock to the perfect forms of the rude implements, which, from the great number of chippings and small detached masses of rock found in the vicinity, were unquestionably made in large quantities. It yet remains to be settled, however, to which period of the stone age these specimens can with certainty be referred. That our recent Indians used many exceedingly rude stone implements cannot be questioned, and even to-day among the western tribes, stones picked up at random are used for various domestic purposes, and when a camp is changed many such are left with other things which are of too little value to be taken away. From these facts it is evident that the ruder implements and utilized natural forms, are not a certain evidence as to the period of development of the people who made use of them. That we, in camping out, are so often forced to make use of stones, shells, bones, and withes of roots or bark, should be considered in drawing deductions from the rude character of any set of implements. The customs of our Indian tribes show that in American Archæology it is necessary to be exceedingly cautious in drawing our conclusions. Hence while the rude implements, chips, and refuse material found about

Wakefield may indicate that an early or rude people lived there we have not yet the evidence necessary to prove that any other people than the Indians were inhabitants of this region.

To Mr. AGASSIZ we are indebted for numerous specimens received by the Museum of Comparative Zoölogy.

Among the other gifts I take great pleasure in mentioning the collection of Pottery presented by Mrs. S. B. SCHLESINGER. This consists of over a hundred objects, about half of which are from mounds in southeastern Missouri, and the rest are from the present Pueblos of southern New Mexico. As the few specimens of recent Pueblo pottery which we had were from the region of Santa Fé, this little collection from the southern Pueblos is a most acceptable addition to the Museum. Among the pieces from Missouri there are several which show slight variations from those we had from that region. Thus the whole collection is a valuable acquisition.

In the last report mention was made of the receipt from the ARCHEOLOGICAL INSTITUTE OF AMERICA, of a collection of objects obtained by Mr. BANDELIER during his studies and explorations at Old Pecos, and the eastern Pueblos of Cochití and San Domingo. These have recently been arranged in the large table case in the same hall with the models of the Pueblos and Cliff-houses and collections from modern and ancient Pueblos. The collection made by Mr. Bandelier, during his Mexican expedition under the direction of the Institute, has also been received in accordance with the decision of the Institute as mentioned in the last report. This collection, which is principally from Cholula and vicinity, contains a number of stone implements, a few "idols" carved in stone, some interesting pottery, and a number of other ancient and modern objects. Among the pottery vessels are several unlike any we had, and in many respects the collection will add to the interest of our Mexican gallery. Mr. Bandelier's report on his researches in Mexico will soon be issued by the Institute.

In this connection I may mention that we have recently received through Mr. FRED. A. OBER several copper implements obtained by him in Oajaca. These are of two kinds, and as they are unquestionably of considerable antiquity they are of particular importance owing to the great variety of ancient copper implements from Mexico. Previously we had but one in the Museum. They will be described and figured in a special paper on the copper objects in the Museum, which I have prepared to accompany this report.

From Prof. W. BOYD DAWKINS, the Museum has received a small but interesting collection of objects from English caves. This contains a number of flint flakes with the bones and teeth of the cave bear, rhinoceros, hyena, and other extinct animals, and has an additional value coming from one whose labors have identified him with the explorations of the caves in England. Professor Dawkins has also given to the Museum a number of casts of type specimens of flint implements which he has figured in several reports upon his cave explorations.

Another small collection of particular interest consists of a series illustrating the method of making pottery by the Caribs of British Guiana. This was obtained in person several years ago by Prof. H. A. WARD, of whom the collection was purchased. It consists of a mass of clay ready for the potter, a number of vessels ready for burning, others which have been burnt, and several ornamented in colors. Also the small gourd scrapers of several shapes with which the potter smoothed the vessels, and the small smooth stones used in polishing their surfaces. The whole collection was purchased by Professor Ward of an Indian woman who was engaged in the work at the time and whose full stock he obtained. Among the unburnt vessels are several that are small and rude which Professor Ward saw the Indian woman make and give to her children to play with, in order to amuse them while she continued her work. These toy vessels suggest that many of the small objects of a similar character found in mounds and graves may have been the playthings of children, as I have already stated was probably the case with those which I obtained in Tennessee, from stone graves containing the remains of skeletons of children.

From Dr. EMIL SCHMIDT we have received two small soapstone pots made near Sondrio in northern Italy. The following account, which Dr. Schmidt has been so kind as to send me, relating to the early manufacture of soapstone pots in the old world, and their continued use in some places, is so full of interest in relation to the old Indian quarries in this country, where the same method of obtaining the masses from the quarries was employed, that I reproduce his letter entire.

Essen (Rhenish Prussia), March, 1881.

Dear Sir:

I take the liberty of sending you two European stone pots, which I hope will be of some interest, showing in many points of their

manufacture a close resemblance to that observed at Angell's farm and at Santa Catalina.

In August last returning from Italy, I passed the little town of Chiavenna. It is situated on the river Maira near its junction with the Lira, the first coming down from two of the oldest Alpine passes, the Septimer and the Maloggia, the latter from the Splügen. To the south the valley of the Maira is bordered by a range of mountains chiefly composed of granite, gneiss and hornblende schists. One of the last spurs projects right to the houses of Chiavenna like a bold promontory; it consists of soapstone ("schistes de Malenco" of the Swiss geologists). Its walls are nearly perpendicular; its summit, called the Paradiso, is planted with vines, oranges and figs, and commands a splendid view over the town situated immediately at its foot and over the three valleys radiating towards the north, east, and south. It was, of course, originally in unbroken connection with the whole mountain ridge, being only the last spur of it; but now it is completely separated by a transverse artificial cutting, whose floor goes down nearly to the level of the valley. It runs from N. N. W. to S. S. E.; its length is a little over 400 feet, its maximum height 150 and its width 30 feet, the walls being nearly perpendicular.

When I entered this cutting I was struck by the traces of old stone-pot quarries, and I remembered at once the description of similar quarries given by you and Schumacher. The walls are covered with markings of cutting (metallic) tools; nowhere are to be seen traces of boring or gun-powder blasting. Marks of stone pots having been worked are very frequent, showing every stage of manufacture from the first cut to the final detaching of the boulder. I made a few sketches of some of them, copies of which I send you enclosed.¹ It seems that the spot where a pot was to be worked out was often first marked by a cross (fig. 2), or horse-shoe-like marking (fig. 3). The groove was first cut at right angles; during the progress of the deepening, the corners of the boulder by and by became rounded off. If the groove was sufficiently deep, the strokes were conducted in a converging direction so that the neck of the boulder became more and more narrow and at last the mass being only in weak coherence with the rock was easily detached by levers.

Fig. 1 shows the beginning of a groove; it is drawn only on three sides and at right angles; the boulder is 33 cm. long and 28 cm. broad.

In fig. 2 the corners are rounded but the groove not yet conducted all around; the boulder, signed by a cross-like mark, is 25 cm. in diameter.

Fig. 3 shows three boulders in different stages of working; the one to the left (*a*) is 35 cm., the middle one (*b*) 27 cm. in diameter, the third (*c*) is 27 cm. long and 18 broad; *b* is signed by two horseshoe-like markings, *c* shows a T-like cutting. The groove is shallow around *a*, deeper at *b*, and deepest around *c*, a corner of which seems to have been broken off during the cutting of the groove. Fig. 4 represents a ball-like pot-boulder of 30 cm. diameter, worked nearly all around; being 25 to 30 feet

¹These interesting drawings are preserved in the Museum, and the references to them are here retained for future comparison. F. W. P.

above the floor, the view is much foreshortened. Finally, in fig. 5, the pot-mass is quite detached by breaking the small neck. The impressions of the tools show that the strokes have been conducted in a radial direction, diverging from it only from below because of the difficulty of the working.

In the western wall about 60 feet above the floor, the word SALVIVS in large letters is cut in the rock. At the southern entrance about 10 or 15 feet above the floor, on both walls corresponding holes and grooves may be seen, the latter converging like a gable. Probably these holes supported the beams and rafters of a roof, perhaps of the workshop of the old potters.

In the pavement of the streets as well as in the walls of the houses and garden terraces, thousands of "nuclei" may be found, which prove that at Chiavenna the bowlders were not only broken, but also finished into stone pots by means of the turning-lathe. They are all in the shape of an obtuse cone, with a shallow hole (from the lathe's mandril) in the centre of the base; the surface shows the circular impressions of the chisel.

It was related to me that similar traces of soapstone quarries exist near Chiavenna and at Plurs, but none of them are worked at this time.

When were the pots of the Paradiso cutting manufactured?

History tells us that Galeazzo II, duke of Milan, at that time master of Chiavenna, in 1363 for the purpose of fortifying, began cutting the ditch that separates the Paradiso from the mountain ridge, and that the ditch was finished in 1405 by Giovanni Maria Visconti. Probably there existed a smaller ditch a long time before; this would be shown by the engraved Latin name SALVIVS in the upper part of the western wall. Also it is known that the Gauls had fortified the Paradiso already before the time of the Romans. Pot-stones may have been broken there since that time and their manufacture may have been continued until the achievement of the ditch. Of course, the stone-pot manufacture was most flourishing in the district in the first centuries of our era, and at Plurs it continued until 1618, when this place was totally destroyed and covered by the falling down of Mount Conto. Still soapstone pots are now manufactured to a certain extent at Lazanda in the Malenco valley near Sondrio. From there also are brought the "lavezzi" (stone pots from "lebes," basin,) which the conservative families of Chiavenna still use, and of which I send you two specimens. New stone pots are first warmed and rubbed with fat and onions; if used for some time they have a black, greasy and rather disgusting appearance, yet the ladies of Chiavenna praise their good qualities, especially for preserving food and milk. One of the dishes I bought at Chiavenna resembles your figure in the 11th Report (p. 273). It is also provided with two knob-like handles. In the Guide of Gsell-Fels (Oberitalien, p. 74), I find a quotation of Gubler describing the manufacture of soapstone pots at Plurs (of course before its destruction in 1618). I give it to you in his original words: "Neben Plurs auf seiner Linken liegt das alte Bergwerk der Steinen, so zum Hausbrauch tüchtig gemacht werden. Die Bergleute ledigen mit ihren eisernen Instrumenten

inwendig von dem Berge ganze Stück, die sie folgendes heraus in die Werkstätten, die unten am Wasser stehen, fertigen; daselbst formiren sie, was ihnen beliebt, durch eine besondere Dreherkunst, die vom Wasser getrieben und von dem Dreher vollführt wird. Den Stein machen sie hohl wie einen Kessel, da ja der äusserst den grössten, der innerst den kleinsten abgibt; sie werden fein dünn gemacht und einer nach dem andern abgedreht, als wann eine Zwiebel von dem einen Umlauf zum andern sich abschält."

I send to-day by mail the case with the two pots; perhaps they will arrive a few days after this letter. Hoping that they will come safe to your hands and that they will interest you a little as the European counterparts of your American stone pots, I remain, dear sir,

Yours truly,

Dr. E. SCHMIDT.

An object of Historical interest is the cast of the "Endicott Rock" kindly forwarded to the Museum by the DIRECTORS of the Winnipiseogee Lake Cotton and Woollen Manufacturing Company. This rock² which is at the outlet of the lake, near the Weirs, was inscribed by the Commissioners acting under an order of the General Court in 1652, as marking what they believed to be the northernmost part of the Merrimack river, they mistaking the outlet of the lake for the source of the river. As this inscription is probably the oldest cut upon a granite rock in New England, it is of considerable importance archæologically in giving a clew to the rate of weathering of rocks of that character.

My own field-work during the past season was confined to a trip to the now well-known cemetery near Madisonville, Ohio, and to a brief visit in September to the place known as Indian Hill in Kentucky, about fifteen miles from Mammoth Cave. On the top of this hill, which is difficult of access, the sides in many places being nearly vertical natural walls of rock of considerable height, were found a large earth-circle and the remains of several stone-graves. The latter had, however, been disturbed, and the limited time at my disposal prevented a careful search through the growing corn for others. All about on the hill-top were signs of an ancient village site, and a number of stone implements were found on the ploughed ground of the corn-field.

A trench was cut through a portion of the circle, and I became satisfied that this circle, as I have found to be the case in other

² An account of this rock has recently been published by James B. Francis, Esq., of Lowell, and a brief account, with a wood-cut, is given in the Bulletin of the Essex Institute, Vol. IX, p. 155.

places, marked the site of a habitation. Had this hill been examined before it was put under cultivation, there is reason to believe that much of interest would have been secured, but the ploughing of the ground over a large portion of it for several years has now made it a place where only surface relic hunting could be followed with success.

During my trip to Madisonville I was most cordially received by the several gentlemen of that town who are so carefully conducting the explorations of the ancient village site and burial place. The following brief report of this trip was published in the Harvard College Bulletin, for July last :

"In April last, by the kind invitation of the Madisonville Literary and Scientific Society, I made a partial exploration of the Ancient Cemetery at Madisonville, in the Little Miami Valley, Ohio. The burial ground, which has now become famous in American archæology, is in close proximity to an old village site, on which can still be traced the circular ridges of earth, indicating the places where once were the habitations of the people, in the midst of which is an earth mound about five feet high.

For over two years several gentlemen of the Madisonville Society, which through the liberality of the proprietors has control of the land, have been engaged in a careful exploration of the old cemetery, and during this time very much of interest has been discovered.

The cemetery probably extends over fifteen or more acres of the extensive plateau, and is in places still covered with a growth of large trees of various kinds, forming what is termed the primeval forest. From twelve to eighteen inches of leaf-mould overlies the hard-pan of the plateau.

About three acres of the cemetery have been dug over, foot by foot, and many objects have been discovered, particularly with the skeletons, which are generally found at a depth of two or three feet. Over six hundred skeletons have been thus far discovered. A number of crania have been secured, and I brought home several for the Museum, for which I am specially indebted to Dr. C. L. Metz, who has paid particular attention to the human remains and has secured a valuable pathological collection.

There have been found with the skeletons a number of vessels of pottery. The most common of these are small cooking pots with rather pointed bottoms and with four handles. Most of these vessels are simply cord-marked, but occasionally one is found ornamented with incised lines, or with rows of circular indentations. Two have been obtained on which were small and rudely made medallion figures representing the human face, similar to many from the Missouri and Arkansas mounds. On one pot a similarly formed head is on the edge so as to face the inside of the vessel. About half a dozen small vessels have a very interesting form of decoration which seems thus far to be peculiar to this place. These are known as the 'Lizard' or 'Salamander' pots. On some of these ves-

sels the salamander, which is fairly modelled, is on the surface of the broad flat handles on opposite sides, on others these ornaments are placed between the handles, and on one they form the handles. In all, the head of the salamander is on the edge or lip of the vessel, and in one or two it is even carried over a little on the inside, similar to some of the conceits on Japanese pottery. The four legs and the tail of the animal are bent so as rudely to give an artistic effect, and the potter who conceived the idea of thus decorating common cooking vessels probably had artistic feeling above the common standard.

A few other forms of vessels are represented by single specimens. Such are an ordinary pot attached to a hollow stand a few inches high; two vessels joined together one above the other, the upper without a bottom; and a flat, oblong dish with handles at each end. The salamander ornament, and the character of the broad flattened handles, may be said to be the principal peculiarities of the pottery thus far found in the cemetery. In general character and finish, it is unlike the dark pottery of the Missouri type, but it evidently belongs to a corresponding period in the development of the art, and approaches both the Missouri type and the Michigan-mound type, so far as we can judge from the few specimens yet known from the latter region.

Pipes of various shapes, cut from several kinds of stone, some slightly carved, have been found with the skeletons and under the leaf-mould, as have also various implements of stone, particularly chipped arrow-heads, knives, drills, polished celts, hammer-stones, etc.; but I believe that not a single grooved axe has yet been found in the cemetery proper, although they are common in the neighborhood. Numerous bone implements, and some shell and copper ornaments have also been found with the skeletons.

It is, however, to the singular 'ash-pits' which have been discovered in this cemetery that I wish to call particular attention, and it was to their examination that I gave the greater part of my time.

These ash-pits, as they have been well named, are circular excavations in the hard-pan of the plateau, from three to four feet in diameter and from four to seven feet deep from the surface of the leaf-mould. Most of the pits are of about the same diameter from top to bottom, but several have been found which are one or two feet wider at the bottom than at the top. At the bottom of some of the pits a small circular excavation has been found, either directly in the centre or on one side.

That nearly all of the four hundred pits thus far discovered in the cemetery were made before the six hundred bodies (whose skeletons have been exhumed) were buried,³ is shown by the fact that a large number of the skeletons were found over the pits, and most of the burials seem to have been made just below the recent soil or leaf-mould, which, so far as I could judge from my hasty observations, seems to have been *formed over* the pits. If this should prove to be the case, the antiquity of the pits would be, probably, considerably beyond that of the four or five hundred years

³ Since this was written many more skeletons and ash-pits have been found.

indicated by the large forest trees growing over them. That the place had been also used as a cemetery, at a time preceding the digging of some of the pits, was conclusively shown by the fact that skeletons found at a depth of from one to two feet in the hard-pan, below the leaf-mould, had been disturbed when the pits were dug. In one instance, in my own exploration of a pit, the upper part of a human skull was found just outside the wall of the pit; the rest of the skeleton, probably, had been removed when the pit was dug. In a few other instances Dr. Metz has noticed that a skeleton had been disturbed and the bones placed in unnatural positions on the sides of a pit, as if, when making the excavation, the workers had come upon a skeleton and had carefully taken up such of the bones as were in the way and placed them with the undisturbed bones on one side or the other. But this complication of facts in regard to the comparative age of the pits and the burials is only one of the many problems to be solved in relation to this interesting locality.

The contents of the pits themselves are of peculiar interest, and the purpose for which they were made is still, I think, a mystery, although, of course, several theories, more or less plausible, have been advanced.

The average pit may be said to be filled with ashes in more or less defined layers. Some of these layers, particularly near the top, seem to be mixed with the surrounding gravel to a greater or less extent; but generally after removing the contents of the upper third of the pit, a mass of fine, gray ashes is found, which is from several inches to over two feet in thickness. Sometimes this mass of ashes contains thin strata of charcoal, sand or gravel. Below the mass of ashes, burnt stones have been found in some of the pits, and also occasionally in the ashes. Throughout the whole mass of ashes and sand, from the top of the pit to the bottom, are bones of fishes, reptiles, birds and mammals. Those of the larger species of mammals, such as the elk, deer and bear, are generally broken, and all are, apparently, the bones of animals that have been used as food. In some pits, as in one which I opened, about half a bushel of such bones have been taken out. With the bones are the shells of several species of *Unionidæ*, of which from fifty to a hundred or more have been taken from a single pit. Many of the valves, but always of the species having massive shells, have a large circular piece cut out near the centre. There are also found in these pits many and often large pieces of pottery, but up to this time the only whole vessel obtained from a pit was the one found in the last of the six that were emptied during my visit.⁴

A large number of implements made of bones and of deer and elk antlers have been found. Those made of elk antlers are in most cases adapted for digging or for agricultural purposes, and are often so large and so well made as to prove that they were effective implements. One form of implement which, so far as I know, has not been found in any other place, is made from a leg-bone of a deer or an elk. These singular longitudinally-grooved bones have sharp edges, bevelled on the inside, and were probably used as scrapers of some kind until the bone was gradu-

⁴ Since then a pottery dish has been found in one of the pits recently opened.

ally worn through in the centre, as shown by a large number of halves as well as by several perfect specimens showing various stages of use. One, which had been used but little, if at all, was taken from one of the pits opened under my direction. The most common bone implements are the 'awls,' or pointed bones of many sizes, of forms similar to those found in other places. Among other objects made of bone are beads and small whistles or 'bird-calls' made from the hollow bones of birds, and also flat and cylindrical pieces with 'tally' notches and marks cut upon them. Short, cylindrical pieces of antler, carefully cut and polished (similar objects have been found in the grave-mounds in Arkansas) are often found. Two or three harpoon-points and a few bone fish-hooks have also been obtained.⁵

Arrow points, drills, scrapers and other chipped instruments of stone are common. A few polished celts and also several rough hammer-stones have been found in the pits.

A number of objects of copper, particularly beads, have been taken from the pits, as have also several pipes, of various shapes, cut out of stone.

This list of objects, which is far from being complete, is sufficient to show that anything used by the people who made these pits may be expected to turn up during future explorations; and if the same care is taken in the continuation of the work as has thus far been given, very much of importance relating to the life of the people will probably be discovered.

It yet remains to call attention to the discovery of a large amount of carbonized corn at the bottom of two of the pits. In both instances the corn had been covered with bark, twigs, and matting, which were also burnt. In one of the pits were several bushels of corn, some of which was on the cob and below the rest. Above the corn the pit was filled with the usual mass of ashes, containing animal bones, shells and other things.

At the bottom of one of the pits, and under the usual mass of ashes, animal remains and potsherds, in a layer of ashes about a foot in thickness, there was found a perfect human skeleton. This is the only pit of over four hundred that have been opened in which human bones have been found,⁶ and this has been taken as evidence, as far as it goes, that these pits were the places of temporary deposit for the dead, the bodies being afterward removed for final burial in mounds or other places. It seems to me, however, that the fact that the skeleton was under the same materials—ashes, animal remains, etc.—as found in the other pits, which are always in more or less perfect and undisturbed strata, is decidedly opposed to the theory that the pits were temporary graves. It rather

⁵ In one of the pits recently opened the contents of which were sent to the Museum, there was found a bowl of a pipe made of bone.

⁶ Since my visit, other human bones have been found in the pits, and other discoveries of interest have been made which will soon be reported in detail by Messrs. Low and Metz.

indicates that in this single instance, from some special motive, this pit was utilized as a grave. The same reasons would hold good for not regarding the pits as *cachés* for corn and other objects to be temporarily preserved.

This brief sketch of this interesting cemetery would not be complete without reference to two or three areas about fifty feet in diameter, in which neither ash-pits nor skeletons have been found. It should also be noted that a large kitchenmidden, several feet in thickness and of considerable extent, exists at the head of a small ravine. An extended exploration of this great refuse pile by Dr. Metz showed that it contained the same character of materials found in the pits, and it evidently belongs to the same period. I will only add that a large amount of interesting material was secured during my visit to this ancient cemetery, for which the Museum is indebted to the liberality of the gentlemen of the Madisonville Society, who not only kindly permitted me to explore the place, but also gave me many objects that had been previously obtained."

On my return to Madisonville in September, I had the pleasure of making arrangements with the Madisonville Society by which the Museum will, by paying a portion of the expenses of exploration, receive its share of all that is obtained as the work of excavation proceeds. I am satisfied that by joining the Madisonville Society in this work, the Museum will not only receive important additions to its collections, but that the encouragement thus given to a local society which is working with care and wisdom, and is preventing the random exploration of prehistoric sites in the vicinity, will have good results in stopping to a certain extent the wanton destruction of mounds and other important ancient works by mere curiosity hunters, or by dealers in "relics."

We have already received the first instalment of the material obtained since the coöperation of the Museum, and information that a second lot has been forwarded to the Museum. Our connection with this work has also resulted in the presentation of many specimens by those who have heretofore sustained the principal cost of the explorations, as will be seen by a reference to the list of additions over the names of Messrs. C. F. LOW, P. P. LANE, C. L. METZ, and E. A. CONKLING.

To Mr. THOMAS CLENEAY we are indebted for a considerable collection of chipped implements and other specimens from the Ohio valley, which he kindly selected from the duplicates of his large private collection.

It will be noticed by reference to the list of contributors to the

Library, that 91 volumes, and 208 pamphlets and serials have been received from 72 different sources, during the year. As stated in the last Report, all the more important volumes and pamphlets are recorded under their titles in the Quarterly Bulletin, published by the College, which contains the list of additions to all the libraries in the University. But I must not fail to call your attention to the important series of volumes presented by the ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND. This valuable addition to our library consists of a full series of the Journal of the Anthropological Institute, and, with the exception of a few of the early numbers, now out of print, the many publications of the Ethnological and Anthropological Societies of London, previous to their union and the formation of the present Institute. To the officers of the Institute we are particularly indebted for this valuable gift, and I may add that the Journal of the Institute is also kindly forwarded to the Museum as published.

In connection with this reference to the library, I may mention the deposit by the heirs of the late Samuel Batchelder, of the great work on Egypt published by the Commission under Napoleon, consisting of nine quarto volumes of text and fourteen volumes of folio plates. These volumes are contained in a black walnut case and are received as a deposit subject to use in the Museum.

During the past year much has been done in the internal work of the Museum. The cases on the second northern gallery have been built, and are now being filled with collections relating to the recent and present Indian tribes. This gallery will soon be thrown open to visitors, and will form an interesting and instructive addition to the collections on exhibition.

A new case has also been put in the central hall on the second floor, and has been filled with objects from the adobe mounds and ruined pueblos of Utah and New Mexico.

The first southern gallery has been floored over so as to separate it from the room below, and will soon be provided with suitable cases for the European collections, to which it will be devoted; while one side of the room below has been recently cased for the accommodation of the library. In this connection I may also call your attention to the several desks and tables, which form a portion of the movable furniture of this room and of the work-room on the upper floor. These have been made of cherry to correspond with

the cases, by Mr. CHICK. Many photographs, engravings and squeezes, now hung on the walls in various parts of the Museum, have been framed by Mr. Chick, during the past year.

The authors' catalogue of the library has been kept up to date by Miss SMITH, who has also made considerable progress in the analytical work or cataloguing of separate papers in serials and in bound volumes.

As it is intended to keep the library entirely within its legitimate limits, it is my hope to have it so arranged and catalogued as to be readily available for the purposes of Museum work.

In no other year since I have had charge has so much been done to make the Museum and its objects known to the public, or so much use been made of its collections for purposes of instruction and research. I have already mentioned the volume written by Dr. Abbott, which was in great part based on materials in the Museum, and in aid of which every facility in my power was given. Mention has also been made of the special edition of the pamphlet on the palæolithic implements of New Jersey which has been sent out by the Museum. I may now add that the large quarto volume containing my reports on the archæology of California, Arizona and New Mexico, made to Lieut. G. M. Wheeler, U. S. E., in charge of the U. S. Geographical Surveys west of the 100th meridian, under the direction of the Chief of Engineers, was issued from the Government office in November last, although the volume was completed and stereotyped in 1879, the date upon the title page. This volume is in great part the result of researches in the Museum, and contains many references to our specimens, and numerous figures taken from our Californian collection. It also contains a chapter on the crania of Indians of California, written by Mr. Carr, which is based upon the large collection of crania, received from the exploration of Mr. Schumacher.

In addition to these publications, I have had the pleasure of making several communications to the Boston Society of Natural History, the American Academy of Arts and Sciences, the Essex Institute and the Harvard Natural History Society. These were upon subjects connected with my researches at the Museum, or were descriptions of particular collections received during the year. Dr. Palmer also gave last winter, to the Natural History Society of Boston, an account of the collection which he obtained

for the Museum from the Mexican caves ; and Prof. D. P. Penhalow did the same in relation to the Aino collection which he had presented to the Museum. Mr. Carr has finished his important work on the historical evidence in regard to agriculture, sun worship and mound-building, among many of our Indian tribes. This will soon be published in full in the *Memoirs of the Kentucky Geological Survey*. Several portions of this memoir have been read by Mr. Carr before the Boston Society of Natural History. His paper on the Crania of New England Indians based on specimens in the Museum, was published by the Natural History Society during the past year. Dr. F. W. Whitney, the Curator of the Museum of the Harvard Medical School, has continued during the year his researches upon our osteological collection and is preparing a paper for our next report on the numerous pathological specimens in the collection. He has also made use of several of our interesting specimens in his remarks before the Mass. Medical Society.

From these statements it will be seen that important use is constantly being made of the valuable material in the Museum and that it is available for all legitimate purposes.

The number of visitors to the Museum is steadily increasing as its character is better understood. Hardly a day passes, that I am not called upon to answer the questions of interested visitors. Many schools and classes also come to the Museum, and when notified of such visits I have endeavored to make them profitable to the scholars. The great interest in the Archæology and Ethnology of America, manifested by many of the visitors, induced me last spring to offer a free course of four explanatory lectures in the several halls of the Museum, when I had the gratification of finding that more people wished to attend the lectures than could well be accommodated, and that a thorough and widespread interest in American Archæology prevailed. This preliminary course has led to my offering another of six gallery lectures on Thursday afternoons, which commenced yesterday. For this course, free tickets to the number of one hundred and fifty have been given out on application, this being the largest number which our rooms could accommodate.⁷ The subjects to be discussed in this course are as follows : first the Mounds and their contents ; second, the Pottery

⁷ The demand for admission to these lectures was so far in excess of the accommodations that the course was repeated on the following Saturdays.

from the Mounds; third, Ancient and Modern Pueblos; fourth, Mexico and Central America; fifth, South America; sixth, Ancient Peruvian Art.

I have also just concluded a free course of nine lectures before members of the classes for Private Collegiate Instruction for Women in Cambridge.

While the various matters mentioned have naturally taken much of my time, I can but believe that they are such as you would wish to have continued within such limits as will not lead to the neglect of the administrative duties of the Museum and of the proper arrangement and care of the collections, which must necessarily receive my first attention. In these last named duties I have, as heretofore, received help from Mr. CARR, who continues his voluntary services, and from Miss SMITH and Mr. CHICK.

I have also the gratification of stating that, by the liberality of a few friends, the services of Miss C. A. STUDLEY as an assistant in the Museum have been secured without encroaching upon the limited means derived from the Museum funds. Miss Studley was at the Museum for three months of the past year, as a special student in craniology, and commenced work as an assistant on the first of January last.

It would be unfitting to close this summary of the year without alluding to the loss of two friends of the Museum, who not only took a deep interest in its objects, but were also distinguished for their contributions to American Archæology.

Dr. SAMUEL F. HAVEN was born in Dedham, Mass., May 28, 1806, and died at Worcester, Sept. 5, 1881. For forty years he was the active librarian of the American Antiquarian Society at Worcester, and during this period, he made numerous contributions to early American History. It is however for other reasons that I feel called upon to refer to him in this report. For nine years he acted as auditor of accounts for the treasurer of your Board. In 1855 he sent to the Smithsonian Institution a concise and thorough summary of the various opinions in regard to the Archæology of the United States.

This memoir, printed the following year in the eighth volume of the Smithsonian Contributions to Knowledge, is a work to which every student of American Archæology must often turn for guidance in many things relating to the early history of the science

in this country. The careful and concise manner in which it was prepared, and the critical discussions it contains, will ever keep Dr. Haven's name associated with those of the foremost workers in the subject to which it relates.

The Hon. LEWIS H. MORGAN was born at Aurora, Cayuga Co., New York, Nov. 21, 1818, and died at Rochester, Dec. 17, 1881. His ancestors were of early New England stock, and he often mentioned with pride that he was thoroughly American in blood and in thought. He graduated at Union College in 1840, and soon after was admitted to the bar, and settled at Rochester. In 1855 he became interested in the development of the iron and railroad interests about Lake Superior, and gradually gave up his legal practice. During this time he made the observations which resulted in his charming book upon the "American Beaver and its Works." It is, however, his great interest in the Indian tribes, and his works based upon his observations of the character of their government and systems of kinship, which have made his name so well known and have given to him an honorable and enduring position in science and letters. Soon after his college days, he joined a secret society, known as the "Grand Order of the Iroquois" which was modelled on the governmental system of the Six Nations and to this fact is probably due the turn taken by his investigations. Led by his connection with this Society to look into the government and kinship of the Six Nations, he soon began to write letters upon the Iroquois, and in 1851 published his famous work entitled the League of the Iroquois. This was followed by several papers on kindred subjects, which have been so often quoted as to be well known to all, after which came his three great works: the Systems of Consanguinity, a thick quarto volume of the Smithsonian Contributions, published in 1870; Ancient Society, published in 1877, a small octavo volume in which are condensed most of his various thoughts and essays; and finally, his last quarto volume issued from the Bureau of Ethnology of the Smithsonian Institution, "House Life and Architecture of the North American Indians," which was published only a few days before his death. In 1878, Mr. Morgan made a trip to Colorado and New Mexico and on his return presented to the Museum drawings of the ground plan of the ruins of a large Stone Pueblo on the Animas river, which he had examined. This plan, and the paper which accompanied it, containing many of his ma-

tured views, relating to American Archæology and Ethnology, is given in the Twelfth Report.

Mr. Morgan's interest in the Museum was very great, and during three pleasant visits made to me in late years, he expressed himself most enthusiastically in regard to the work it was accomplishing. This is not the place to dwell upon the value of his labors, but that the methods pursued by him have left a strong impress upon archæological research in this country is the universal verdict.

Respectfully submitted,

F. W. PUTNAM,

Curator of the Museum.

PEABODY MUSEUM OF AMERICAN ARCHEOLOGY AND ETHNOLOGY,
Cambridge, Mass., Feb. 24, 1882.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1881.

ADDITIONS TO THE MUSEUM.

24378 — 24379. Flint implements from Glencoe, St. Louis Co., Mo., probably used as spades or hoes.—Collected and presented by Mr. PEYTON CARR.

24380 — 24419. Celts of stone and hematite, together with a fine assortment of flint hoes, scrapers, knives, drills, spearpoints and arrowheads from Allenton, St. Louis Co., Mo.—Collected and presented by Mr. CHARLES E. PILLING.

24420 — 24494. A large and varied collection of stone celts, drills, scrapers, knives, hammerstones and flint points from Ohio; knives, hammerstones and spearpoints from Kentucky; and specimens of stone knives and flake scrapers from Indiana.—Collected and presented by Mr. THOMAS CLENEAY.

24495. Snowshoes, Chippewa Indian.—Collected and presented by Dr. S. KNEELAND.

24496 — 24522. Five "Sepulchral Tablets" from ancient graves in Peru, collected by Prof. ORTON; earthen bottles, bowls, dishes and cooking pots, with prepared clay, polishing stones, scrapers made of gourds, and a pot, dish, and several toys of unbaked clay, from the river Essequibo, British Guiana; fragment of earthen vessel from Barbadoes; a rude shell axe with a handle from Yap Island, one of the Carolines, and an adze, made from Turtle bone, also on a handle, from Mortlock Islands.—By purchase from Messrs. WARD and HOWELL.

24523. Grooved stone axe from near Cherokee Bayou, Rusk Co., Texas.—Collected and presented by Mr. JOHN A. WARE.

24524 — 24525. A modern pot and bowl of steatite, from Malenco valley, near Chiavenna, Italy. Collected and presented by Dr. EMIL SCHMIDT.

24526. Stone flake from Marblehead Neck, Mass.—Collected and presented by Prof. G. F. WRIGHT.

24527. Buckskin leggings, fringed with Sioux scalps, formerly belonging to Wae-ga-sa-pi, a Ponca chief.—Collected and presented by Mr. T. H. TIBBLES.

24528. Fragment of the old gate of St. Augustine, Florida. Collected and presented by Dr. E. PALMER.

24529. Seeds of the *Sophora* from Monterey, Mexico.—Collected and presented by Dr. E. PALMER.

24530—24539. Stone spearpoints and arrowheads, also a grinding stone or "Manos;" chips and broken implements of obsidian and chalcedony; perforated stone ornaments and fragments of painted pottery of the ancient pueblo type, from Prescott, Arizona.—Collected and presented by Mr. J. THOMAS BROWN.

24540—24554. Broken stone gouge from Kennebec river, near Swan Island, Maine; stone sinkers, spear and arrowpoints, with fragments of pottery, and steatite pots from near Kittrell's, North Carolina.—Collected and presented by Dr. SAMUEL CABOT.

24555. Broken stone points from Mason Co., Texas.—Collected and presented by Dr. E. PALMER.

24556—24557. Feathered prayer sticks from the Indians of Laguna, New Mexico; fragments of painted and polished pottery from the San Juan Valley, N. M.—Collected and presented by Mr. E. A. BARBER.

24558—24559. Scalp of a white girl, fifteen years old, burned by the Cheyennes in 1878; flint chips and broken points from Fort Sisseton.—Collected and presented by Mr. A. GECKS.

24560. Casts of stone tablet from Piqua, Ohio.—Presented by Mr. MORITZ FISCHER.

24561—24562. Casts of earthen pots from Eastern Missouri, now in the collection of Messrs. Collett and Kendall, Terre Haute, Ind.—Presented by Messrs. COLLETT and KENDALL.

24563—24578. Bones of *Rhinoceros tichorhinus*, mammoth, horse, reindeer, *Hyæna spelæa* and fox, with flint flakes and implements of quartzite from caves in England.—Collected and presented by Prof. W. BOYD DAWKINS.

24579—24603. Mat used as carpet, and for wrapping the dead; dagger, sabre, bow and arrows, some of them poisoned; fire sticks; harp; mustache lifters, carved and plain; wooden tray, spoons and ladle; and a loom in complete working order with specimen of the cloth on it, all made and used by the Ainos of Japan.—Collected and presented by Prof. D. P. PENHALLOW.

24604. Medicine in wax ball from China.—Presented by Miss ESTHER O. CLARKE.

24605—24607. Calabash, colored black, from Montalegre, Brazil; ornamented earthen bowl, from Breves, Brazil, and a basket from East Bolivia.—Collected by Prof. L. AGASSIZ and presented by Mr. A. AGASSIZ.

24608. Stone inscribed with hieroglyphics from tomb at Sakkara, Egypt.—Collected by Com. J. D. ELLIOTT, U. S. Navy, and presented by HARVARD COLLEGE.

24609—24614. Earthen jar, small clay image and stone pestle from mound at Tola, Nicaragua; shell beads from Calebra Bay, Costa Rica. A mineral, natural form, taken by Mr. AGARTE, from a mound at San Ramon, Rivas Plain, Nicaragua.—Collected and presented by Dr. EARL FLINT.

24615—24850. Grinding stone, obsidian flakes and fragments of dif-

ferent kinds of pottery, some plain, some burnished and others painted in different colors, from Coronango, north of Cholula, Mexico; grinding stones and metates, celts, gouges, hammerstones, beads, grooved stones, stone dish and human images cut from stone; chips, points, cores, and flakes of obsidian and chalcedony, bone implement, shell ornament, portions of human skeletons; earthen disks, spindle whorls, strainers, whistles, moulds, stamps, with a few water bottles, dishes and vases, and a large number of plain and painted human and animal heads in pottery, from the surface and from excavations in and about the city of Cholula and other localities, in the state of Puebla, Mexico.—Collected by Mr. AD. F. BANDELIER, and presented by the ARCHÆOLOGICAL INSTITUTE of AMERICA.

24851. Indian cranium from Salem, Mass.—Presented by Miss C. A. STUDLEY.

24852—24854. Human bones from a mound at Pomona, Florida, with fragments of stamped and plain pottery from shellheaps at the same place.—Collected and presented by Mr. JAMES D. WYETH.

24855. Femur of Cheyenne Indian. Collected by Mr. S. W. GARMAN, and presented by the MUSEUM of COMPARATIVE ZOÖLOGY.

24856. A stone gorget from Boone Co., Ky.—Presented by Mr. ROBERT CLARKE.

24857. Grooved stone axe found near Mammoth Cave, Ky.—Collected by Dr. DAVENPORT, and presented by Mr. FRANCIS KLETT.

24858—24875. Stone muller, celt, hatchet, knives and points, with broken and rude implements of the same material from Indian Hill, fifteen miles from Mammoth Cave, Ky.; a fragment of braided rope, and beads made of cornstalk, on a string, found by Mr. WM. CUTLIFF in Salt Cave, Ky.—Exploration of F. W. PUTNAM, conducted for the Museum.

24876—24878. Cap made of cocoanut fibre by the Indians of Aspinwall; stone sinkers from Point Keys, Marion Co., California.—Collected and presented by Dr. S. KNEELAND.

24879. Rudely carved stone, ploughed up on the southeast point of Winthrop, near shore of Boston harbor.—Presented by Mr. A. C. GOOD-ELL, jr.

24880. Flint flakes, much weathered, from the old Mills farm, S. W. Bethel, near Songo Pond, Maine.—Collected by Mr. D. E. MILLS, and presented by Dr. N. P. TRUE.

24881—24882. Flint points from Schoharie, N. Y. Collected by Mr. O'BRIAN, and presented by Mrs. W. D. BOARDMAN.

24883—25016. Hammerstones, knives, scrapers, drills, sharpening stone, celt, and flakes of stone; earthen pot and numerous fragments of plain, incised and cord-marked pottery; bones of bear, deer, bird, fish and turtle, some of them marked by fire; perforated shells and disks of shell; red ochre; burnt clay; awls, cylinders, scrapers, beads, and a whistle of bone; gouge-shaped implement of antler; fragments of worked bone and antler; and human remains from the ash-pits in the Ancient Cemetery at Madisonville, Ohio; human remains, flint scrapers and

points, stone pipe, stone celt, and fragments of pottery from the leaf mould over the ash-pits at Madisonville, Ohio.—Exploration of F. W. PUTNAM, conducted for the Museum.

25017—25020. Notched stone sinker, rude flint point, and a worked piece of antler from the dirt turned over in digging into the ash-pits at Madisonville, Ohio.—Collected and presented by Mr. THOMAS CLENEAY.

25021—25131. Sharpening stones, knives, drills, celt, arrowheads, chips and rude and broken implements of stone; bone beads, cylinders, awls, and marked and cut fragments of the same material; chisels and implements, probably used for digging, made of antler; nine human crania; bones of deer, fish and turtle; teeth of bear and beaver; a piece of copper; burnt corneobs and nuts; plain, punched and cord-marked pots; fragments of pottery, incised, nail-marked and plain, from the ash pits at the Ancient Cemetery, Madisonville, Ohio.—Collected and presented by Dr. C. L. METZ, Col. P. P. LANE, Messrs. E. A. CONKLING and C. F. LOW, and the MADISONVILLE LITERARY and SCIENTIFIC SOCIETY.

25132—25258. Human crania and other bones; shells of *Unio* and pieces cut from them; teeth of bear, beaver, elk and deer; cut and worked fragments of bones and antler; beads, whistle, needle, points and a pipe of bone; chisels, handles, gouge, cylinders, a harpoon point, and digging and cutting implements made of antler; fragments of pottery; piece of worked cannel coal; red ochre; sharpening stones and flint cores; knives, scrapers, drills and points of same material; a grooved stone, a celt and a carved stone pipe, representing the head of an animal.—Collected by Mr. MATTHIAS BRITTEN, from the ash-pits at the Ancient Cemetery, Madisonville, Ohio.—Subscription to exploration by the MUSEUM.

25259—25260. Cord-marked pot, with four handles, from an ash-pit at Madisonville, and fragments of cranium from a mound near Chillicothe, Ohio.—Collected and presented by Dr. C. L. METZ.

25261. Half of a stone gorget from the surface near Madisonville, Ohio.—Collected and presented by F. W. PUTNAM.

25262—25265. Fragments of pottery, flint chips and a worked bone from Turpin's Hill near Madisonville, Ohio, and stone mullers from Clermont Co., Ohio.—Collected and presented by Mr. E. A. CONKLING.

25266—25274. Flint knives, points, and three stone celts from Warren Co., Ohio, and a stone celt from Madisonville, Ohio.—Collected and presented by Mr. CHARLES WEISKOFF, JR.

25275. Small stone tablet from a grave on Santa Catalina Island, Cal.—Collected and presented by Mr. PAUL SCHUMACHER.

25276. Cast of stone image from the Pueblo of New Pecos, New Mexico.—Presented by Mr. A. H. THOMPSON.

25277—25280. Four specimens of modern pottery from the Pueblos near Santa Fé, New Mexico.—Presented by Dr. ROBERT H. LAMBORN.

25281. A Pandean pipe made and used by the negroes near Crawfordsville, Miss.—Collected and presented by Dr. A. F. BERLIN.

25282—25289. Fragments of human bones, some of them burned; flint knife; fragments of pottery, worked bones, and beads of shell and

bone from mounds in Davis Co., Kansas, three miles west of Junction City.—Collected by Mr. CHARLES H. STERNBERG, and presented by Mr. ALEX. AGASSIZ.

25290—25298. Club from the Fiji Islands; assegais, bow and iron pointed arrows from east coast of Africa; a model of a boat, a bow, and arrows with wooden and iron points, the latter poisoned, also reeds used in making arrows, from Surinam, South America.—By PURCHASE from Mr. DAVID DODGE.

25299. Human cranium and bones from Revere.—Collected by Mr. E. H. WHORF, and presented by Dr. WALTER FAXON.

25300. Shell beads from the province of New Brunswick.—Collected and presented by Mr. CHARLES H. CARMAN.

25301—25393. Fifty-seven modern pots and dishes of different forms, some of them animal and bird shaped, from the Pueblos of New Mexico, and forty-one pieces of Missouri pottery from mounds near Diehlstadt, Missouri.—Collected by Dr. G. J. ENGELMANN, and presented by Mrs. S. B. SCHLESINGER.

25394—25398. A quartz knife, rude and broken stone implements, and fragments of stone pestle and steatite pot, from Apponaug, R. I.—Collected and presented by Mr. EBEN PUTNAM.

25399—25400. Stone points from Lake Champlain.—Collected by Mr. FAXON, and presented by Dr. WALTER FAXON.

25401. Broken stone points from Hartford, Conn.—Presented by Mr. S. W. COWLES.

25402. Rude stone point from North Andover, Mass.—Collected and presented by Mr. AARON THOMPSON.

25403—25407. Stone points from Ohio.—Presented by Mr. S. W. COWLES.

25408—25431. Grooved stone axe and celts of the same material; perforated stones, and fragment of a stone tablet, flint points, knives, scrapers, and rude implements from Massillon, Ohio.—Collected and presented by Dr. A. P. S. PEASE.

25432—25512. A collection of stone knives, daggers, drills, scrapers, and points of different sizes and shapes from Kentucky and Ohio, also points from Indiana, Illinois and Maryland.—Collected by Mr. R. T. SHEPHERD, and presented by Dr. C. C. ABBOTT.

25513—25638. Eleven palæolithics; grooved stone axes; notched and grooved sinkers; hammer and polishing stones; stone celts; and a collection of knives, scrapers, drills and points in jasper, quartz and argillite, from different places in the neighborhood of Trenton.—Collected and presented by Dr. C. C. ABBOTT.

25639—25646. Flint flakes and scrapers from England, and flake knife and core from Thebes.—Collected by Sir JOHN LUBBOCK, and presented by Dr. C. C. ABBOTT.

25647—25671. Grooved stone axe; hammer, sharpening and slick stones; notched sinkers; fragments of pottery, and knives and points in jasper and argillite from Trenton, N. J.—Collected and presented by Mr. RICHARD M. ABBOTT.

25672—25674. Three earthen drinking vessels from Pueblos near Santa Fé, New Mexico.—Presented by Messrs. JOHN C. WATSON and H. W. WESSON.

25675. A painted water bottle from pueblo of Zuñi.—Collected in 1853, and presented by Prof. JULES MARCOU.

25676—26022. This collection, covering three hundred and forty-seven distinct entries in the catalogue, and numbering several thousand specimens, is of special value. With the exception of fragments of pottery, a stone celt, and some other implements of the same material from the shellheaps of Cape Henlopen, it is chiefly from Kent county, Delaware. Many of the implements, and among them some miniature copies of the palæolithics from the valley of the Somme, were found upon the surface, on the site of an Indian village and are therefore, presumably, of recent origin. As a rule, the specimens closely resemble similar articles from New Jersey, in material, shape and finish, though it is worthy of note that in this entire collection there are less than a dozen of the well-defined scrapers, so abundant in the New Jersey collection of Dr. Abbott. It may give some idea of the value of this collection to state that it includes, among other things, eighty-four grooved stone axes, twenty-three celts, one of them a magnificent specimen of serpentine; many pestles, hammer, grinding, rubbing and sharpening stones; with hundreds of jasper, quartz and argillite knives and points, from Little Creek, Jones River, Duck Creek, and other points in Kent and Sussex counties, Delaware; grooved axes and bird-shaped ornament from Church Creek, Dorchester Co., Maryland; stone celt from Wyoming Valley, Penn.; perforated stone ornament from West Virginia; stone spearpoint from Choctaw Co., Alabama; iron tomahawk from Cape Henlopen, and rubbing and polishing stones, perforated stone ornament, clay pipe stems, and stone flakes from shellheaps at the same place.—Collected and presented by Mr. H. R. BENNETT.

26023—26024. Four copper axes from Oaxaca, Mexico, and a copper knife from Teotitlan del Valle, Southern Mexico.—By PURCHASE from Mr. F. A. OBER.

26025. Stone celt used by the early settlers of Pitcairn's Island.—Collected by Capt. JOSIAH S. KNOWLES of Oakland, California, and presented by Mrs. LUCIEN CARR.

26026—26129. A large and interesting collection of chips, flakes, cores and rude stone implements from different localities in Stoneham and Wakefield, Mass.—Exploration conducted for the Museum by Mr. DAVID DODGE

26130—26144. Two crania, one of them copper stained; human bones and hair, iron nails, and fragments of wood, probably portions of coffins; iron knives, clay pipes, fragments of cloth, a brass spoon, and three leaden bullets, flint flakes, and a perforated stone ornament, which was afterwards used as a mould for buttons, with three leaden buttons which were cast in the mould, from an Indian burial place in Kingston, Mass.—Collected and presented by Mr. L. H. KERR

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Rev. E. E. Hale, Boston, Mass. Pamphlet.

¹ The titles of anthropological works received by the Museum are published in the
 quarterly numbers of the *Harvard University Bulletin*.

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REPORT OF PEABODY MUSEUM, III. 6

Western Reserve and Northern Ohio Historical Society, Cleveland, Ohio. Pamphlet.

Prof. Daniel Wilson, Toronto, Canada. Two volumes, sixteen pamphlets.

Hon. Robert C. Winthrop, Boston, Mass. Fourteen pamphlets.

Rev. G. F. Wright, Oberlin, Ohio. Pamphlet.

Dr. G. Barroeta, San Luis Potosi, Mexico. Two photographs.

Mr. M. O. Billings, Marion Centre, Kansas. Four photographs.

Mr. Lucien Carr, Cambridge, Mass. Photograph.

Col. Henry B. Carrington, Crawfordsville, Ind. Six photographs.

Mr. S. V. Proudfit, Washington, D. C. Two photographs.

Mr. W. C. Renfrow, Russellville, Ark. Photograph.

NOTES ON THE COPPER OBJECTS FROM NORTH AND SOUTH
AMERICA, CONTAINED IN THE COLLECTIONS
OF THE PEABODY MUSEUM.

BY F. W. PUTNAM, CURATOR OF THE MUSEUM.

NATIVE copper is pretty widely distributed throughout North America and some portions of South America, either in place or as boulders in the drift, and it can hardly be questioned that it was early noticed in the neolithic period and made use of by the various tribes who lived in, or visited, the districts whence it was obtained. It is also probable that the metal was obtained through intertribal trade, and that objects made of it would be regarded as valuable possessions which in course of time would find their way, by barter and as plunder, to many distant tribes. Thus we find, to-day, in our explorations, objects made of copper, as widely distributed and under nearly as many and varied conditions as stone implements of neolithic forms. It must not, however, be understood from these remarks that all the peoples of America, both North and South, had reached one and the same stage in manufacturing from copper the various objects for which they found it adapted, for the contrary is the fact.

In North America, outside of Mexico, before the coming of Europeans, there is no evidence, as yet, that copper was used otherwise than as a substance which could be hammered and cut into many desired shapes. In Mexico, Central America, Peru and Chili, there is no doubt that copper was both cast and hammered, and by some nations was also mixed with tin or with gold and cast in moulds; but the difficulty of melting and casting unalloyed copper is far too great to be easily overcome, and the statements about the discovery, in the United States, of copper implements which were unquestionably cast in moulds should be regarded as hasty conclusions until we have other information on the subject than seems yet to have been obtained.¹

¹ I have called attention to this point in a short article in the *Kansas City Review* for Dec., 1881, in which I question the discovery of cast copper implements and of the moulds said to have been found in Wisconsin. Since that article was written, the supposed discovery of the moulds has been shown to be without the slightest foundation

As these notes are intended simply as a brief account of the objects made of copper, to be followed by descriptions of others made of bronze, gold and silver, by the natives of America, and contained in the Museum, they are thus necessarily limited, and of course many forms of ornaments and implements known to archæologists will not be mentioned as they are not represented in the Museum.

COPPER FROM THE MOUNDS AND INDIAN GRAVES.

Ornaments and implements made of copper have been found in considerable number in burial mounds in many portions of the United States, both in connection with inhumation and cremation, and also in the stone-graves of Tennessee as well as in Indian graves of a comparatively recent period. They have also been found on the surface of ploughed fields, and have been accidentally discovered in various ways. So far as relates to the collection in the Museum the copper objects, principally from the mounds and graves, can be grouped under the following headings.

BEADS.

These may be classed as cylindrical, convex and spiral. The most common and simple are the little cylinders made of small flat and thin pieces of copper which have been rolled up, leaving one edge slightly overlapping the other; or, if made from a larger piece, the copper is sometimes rolled once or twice on itself, in this way making a thicker cylinder.

Such cylinders are in the Museum as follows:—

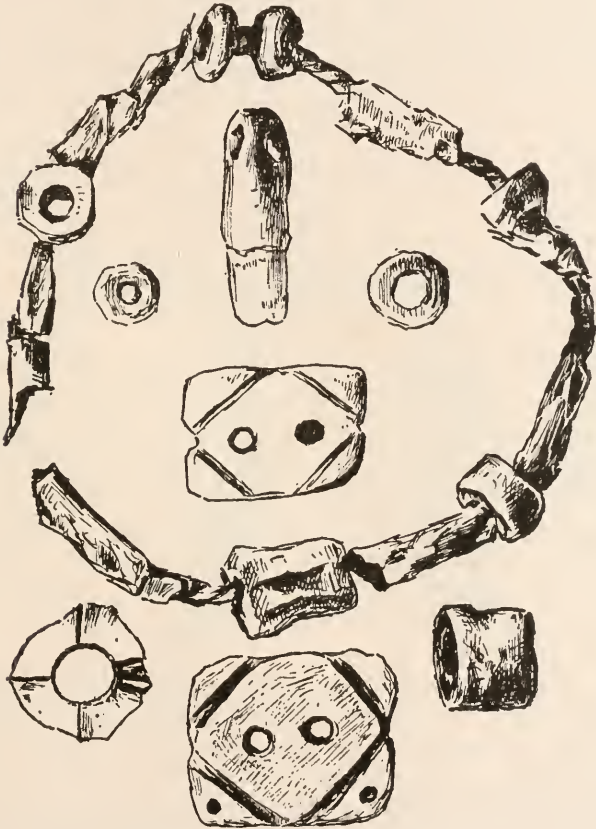
No. 20130. This lot consists of about a dozen small copper cylinders which were found with the neck-bones of a child in one of the Stanley Mounds on the St. Francis River, Ark., by the late Mr. EDWIN CURTIS during the explorations which he made for the Museum. They evidently formed part of a necklace containing

of fact. I may also add that several copper implements, which I have seen, supposed to have been cast, were unquestionably hammered.

The following extract from Strachey's *Virginia*, written about 1612, to which my attention has been called by Mr. Carr, is of interest in this connection: "and for copper, the hills to the norwest have that store as the people themselves, remembered in the first chapter, called the Bocootauwanaukes, are said to part the solide mettall from the stone, without fire, bellows or additament and beat it into plates, the like whereof is hardly found in any other part of the world."—Page 132 in the publications of the Hakluyt Society. London, 1849.

also shell beads, pieces of flat and ornamented shells, shell pendants and a circular piece of perforated bone.² Forty-eight pieces belonging to this necklace were saved. Notwithstanding the copper cylinders are very much corroded and are very brittle, several of them are still on the string, which has been preserved by the action

FIG. 1.



No. 20130. Parts of a Necklace of Copper Cylinders, Shell Beads, Shell and Bone Ornaments, found with skeleton of child. Stanley Mound on St. Francis Riv., Ark.

of the copper, and alternating with these are shell beads, showing that probably all the beads and ornaments found with the neck-bones, which are copper-stained, were strung together as a necklace, portions of which are shown in fig. 1.

² Cut from the plastron of a small turtle, and shown in the left lower corner of fig. 1.

No. 20133. The two beads catalogued under this number were also found by Mr. CURTIS, with the neck-bones of a child, in another grave in the same mound with the last. In this instance, while the neck-bones are much stained by the copper, only the remains of two cylinders were found in contact with about a dozen large shell beads. The most perfect of the cylinders is about one and one-half inches in length and contains a fragment of the twisted cord upon which it was strung.

No. 22008. Four copper cylinders found with a number of large shell beads near the neck-bones of a young person, in the Rose Mound, on the St. Francis River, Ark. Near this skeleton were two earthen bowls and a shell "pin." The cylinders are about one and a fourth inches in length and about one-fourth of an inch in diameter, and are much corroded. Collected by EDWIN CURTIS.

No. 20396. A copper cylinder of about the same size and character as the four last described and considerably corroded. This was found in a mound on the Spoon River, Peoria Co., Ill., by Mr. W. H. ADAMS.

No. 20402. One cylinder about three-fourths of an inch in length and two small cylindrical beads, one of which is about one-half of an inch in length and the other a quarter of an inch, were taken from a second mound on the Spoon River. Four chipped knives or daggers and a mass of red ochre were near the beads. Also collected and presented by Mr. W. H. ADAMS.

No. 18995. The remains of a small cylindrical bead of copper with the twisted fibre upon which it was strung. This bead was found at the bottom of the Parker Mound, near Elmore, Ill., by Mr. W. H. ADAMS.

No. 20306. Two cylinders similar to those already described, although one is made from an irregularly shaped piece of copper, so that when it was rolled up one end of the bead was made larger than the other. These were found in a mound near Fort Lincoln, Dakota Territory, and as the copper still has much of its natural color and is but very slightly corroded, it is probable that these beads are far more recent productions than those already mentioned from the mounds in Arkansas and Illinois. In the same mound were found fragments of cord-marked pottery, two flint scrapers and two flint arrowheads, with several charred corn-cobs. There are several reasons for believing the mounds about Fort Lincoln to be comparatively recent, and the condition of these

copper beads seems to corroborate the conclusion. Collected by Mr. GEO. W. SWEET.

No. 6171. This lot contains sixteen copper beads varying from less than one-fourth of an inch to three-fourths of an inch in length. They are all considerably corroded. Fragments of the string are still preserved in one or two of the beads, and the lot evidently formed a portion of a necklace of the child about whose cervical vertebræ they were found. In contact with the copper beads and evidently forming part of the same necklace were twelve incisor teeth of the moose (No. 6170), each perforated at the end of

FIG. 2.



Nos. 6170 and 6171. Copper Beads, and perforated Teeth of Moose, forming part of necklace of a child. Mound on St. Clair River, Mich.

the root. When found one of the copper beads was adhering to one of the teeth, and Mr. Gillman thinks the teeth and beads alternated on the string, as shown in fig. 2. From a mound on the St. Clair River, Mich. Collected by Mr. HENRY GILLMAN. For an account of this mound and its contents, see Sixth Report Peabody Museum, p. 16.

No. 4898. About fifty small cylinders, one-eighth of an inch in diameter and from one-fourth to one-half an inch in length. Nearly ten inches of the string, made of vegetable fibre, is pre-

served, and about half of the beads still remain upon it. Many of this lot of beads are considerably corroded. An account of the mound on the Detroit River, Mich., in which these beads were found by Mr. HENRY GILLMAN, is given in the Sixth Report of Peabody Museum, p. 12. It is of interest to note that among the stone implements and other objects found in this mound were a beautifully polished double-edged axe made of jadite, a small vessel of pottery about the size of a thimble, two cord-marked jars, and the small abnormal human cranium to which reference has been made by several writers.

No. 4764. This lot consists of five pairs of small copper cylinders about one-eighth of an inch in diameter and about one inch in length. These cylinders seem to have been fastened side by side in pairs, as each pair is now firmly united by the change that has taken place on the surface of the copper. A number of shell beads were received with these and also a small piece of buckskin fringe, preserved by the action of the copper. From a mound at Ferry Point on the Marlborough estate, Strafford Co., Virginia. Collected by Mr. B. R. ALDEN SCOTT.

No. 12292. Two specimens, the most perfect of which is about an inch in length and one-fourth of an inch in diameter, from an ancient burial place near Highgate, Vt., collected and presented by the late Professor J. B. PERRY. These beads are two of a number found in contact with the neck-bones of a child. The two vertebrae received with them are copper-stained.

No. 17342. Twenty-three small copper cylinders or beads, each about one-eighth of an inch in diameter, and together measuring four and a half inches in length. From an Indian grave at Revere, Mass. Collected by Mr. L. K. WASHBURN. In the same grave with these beads, which are but slightly corroded, were found a stone pipe, the bowl of which had been repaired by a band of brass wrapped about it; a small knife made of brass; two triangular arrowheads made of brass; and two circular ornaments also of brass; which prove that the burial was after European contact. No other objects were found in the grave and we have no account of the condition of the bones of the skeleton.

No. 12868. In the year 1868 Dr. EDWARD PALMER collected from an Indian grave at Harpswell, Me., portions of buckskin, and fringe of vegetable fibre, which he considered as the remains of an Indian belt. On the fragments of buckskin there are many green

colored impressions which show that the belt was ornamented by a number of copper beads or cylinders. With the fragments of the leather and string there are an irregular and flat piece of copper, about two inches long by one in width, much corroded, and broken along all but one edge, and three cylinders of copper, which although they are much corroded still contain the twisted vegetable fibre upon which they were strung. The largest and most perfect of these cylinders is nearly two and a half inches in length and about one-fourth of an inch in diameter. The others seem to have been about the same size originally, but are now broken, and all are so much corroded as to be very brittle. In this instance we have a good illustration of the preservative power of the salts of copper, as the vegetable fibre, the skin and even the hair upon it, are preserved by contact with the copper pieces, while the latter are nearly decayed by oxidation.

No. 26618. During the explorations of the Ancient Cemetery at Madisonville, Ohio, copper ornaments have been found with skeletons, in or just under the leaf-mould, and also with the many other interesting objects from the singular "ash-pits." By far the larger number of these ornaments are simple cylinders of copper, but with them have also been found a few copper pendants of simple shapes, such as are described farther on, and a singular ocell-like object which has been figured in the report on the explorations by the Madisonville Society, Part II, p. 32. As is the case with most of these copper ornaments, this interesting object was found with the skeleton of a child, between one and two feet from the surface, at or near the bottom of the leaf-mould.

Among the articles of copper obtained by the Museum during these explorations, are a number of cylinders most of which evidently formed portions of necklaces.

Near the bottom of the leaf-mould, about eighteen inches from the surface, with the remains of a skeleton of a child, there were found portions of a necklace made, in part at least, of three large copper cylinders, a number of spiral wire beads and a cross-like pendant, as shown in fig. 3. The cervical vertebræ, the collar bones, and a portion of the under jaw were much discolored by the action of the copper which was very much corroded and brittle. Several of the spiral beads were in fragments and even the pendant was broken in two pieces. The three large cylinders still preserved, and shown in the figure, are each one and a fourth inches long by three-eighths

of an inch in diameter. In one of them is a small mass of what seems to be the remains of a strip of leather or buckskin upon

FIG. 3.



Nos. 26618, 26619, 26620. Necklace made of Copper Beads of two kinds, and with a Cruciform Pendant of copper. Found with skeleton of child. Ancient Cemetery, Madisonville, Ohio.

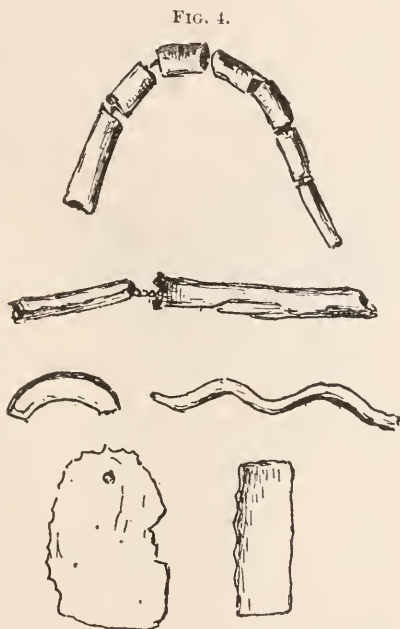
which the several things forming the necklace were probably strung, and on the outside of one is a substance which may possibly be the remains of a piece of bark. Collected by F. W. PUTNAM in connection with the Madisonville Explorations.

No. 26638. Ten feet from the skeleton last mentioned, another of these cylinders was found in the leaf-mould, eighteen inches from the surface. In this instance it was not associated with human bones. Collected by F. W. PUTNAM.

No. 26611. In the leaf-mould with the skeleton of another young child, the bones of which were so much decayed that none could be saved, were found ten small cylinders, two bits of wire, a small flat piece of copper, and

a small copper pendant. These several objects are shown in fig. 4. These little cylinders are each one-eighth of an inch or less than that in diameter, and vary very much in length, as shown in the figure. The three smallest together measure not much over half an inch in length, while the largest of the lot is an inch long. The action of the copper has preserved the fine two-strand string of twisted fibre which still holds them together. Collected by F. W. PUTNAM.

No. 26612. The flat piece of copper found with the fragments of a necklace, referred to in the preceding paragraph and represented in fig. 4 (lower figure on the right), is evidently a piece from which a small cylinder, like those last mentioned, was to be made, and I have therefore classed it with the beads. It consists of a piece of native copper, hammered until it is about as thick as ordinary writing paper, and afterwards cut into its present shape, as shown by its slightly rough or undulating edges. It is three-fourths of an inch long and one-fourth of an inch wide. Collected by F. W. PUTNAM.



Nos. 26611, 26612, 26613, 26614. Copper Ornaments found with skeleton of child. Ancient Cemetery, Madisonville, Ohio.

No. 26824. Two copper cylinders are in the collection, which were obtained from two of the "ash-pits" during the exploration of the ancient Cemetery at Madisonville, by Mr. M. BRITTEN. Like nearly all the other things obtained from the ashes in the pits, these cylinders are better preserved than those found in the leaf-mould, although they have turned green. One is nearly two inches long and one-quarter of an inch in diameter, and shows by the laminations upon it that two pieces

of copper were pounded together in order to make the cylinder of its present length.

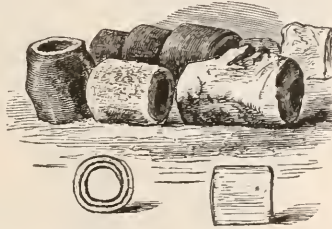
No. 26798. This second specimen from the ash-pits is about one inch in length and slightly more than one-eighth of an inch in diameter. Its surface is smooth and there is a decided patina upon it, such as is noticed upon very old bronze.

No. 26637. During the explorations of the last day of my work at the Ancient Cemetery at Madisonville, the skeleton of a woman was found in the leaf-mould, with which was the skeleton of a child, two or three years of age at the time of its death. With these skeletons were found twenty-two copper cylinders varying from one to two and a quarter inches in length, and about one-quarter of an inch in diameter. These cylinders are considerably decomposed and are very brittle. With these were found portions of a large head made of bone, and three charred kernels of corn. Four copper rings, described on page 96, were on the finger bones of the woman. I regret that owing to a heavy rain at the time this skeleton was uncovered a thorough examination could not be made of the contents of the grave while in place. Collected by F. W. PUTNAM.

No. 8992. In the year 1876, the late Prof. E. B. ANDREWS, acting for the Museum, explored a number of mounds in southeastern Ohio, of which a full account is given in the Tenth Annual Report. During these explorations a number of articles made of copper were found, among them the lot of beads to which reference is now made. Professor Andrews states that the mound in which these beads were found was on the land of Mr. George Connett in Wolf Plain. It had long been ploughed over, and at the time of its exploration was about six feet high and forty in diameter. About five feet from the top, charcoal and ashes were found, in which were the remains of a partially burnt human skeleton and about it the copper beads were placed. Their distribution was such as to lead Prof. Andrews to conclude that they were not worn as ornaments at the time of death of the person buried, but were simply deposited in the grave as property. With these were found about fifty beads made of shell, and a singular copper implement described on page 108. It is important to note that no other objects were found in the mound. For further details in relation to this interesting exploration, and for an account of the manner in which the body seems to have been burnt, I must refer to Vol. II, p. 59, of Reports of the Museum.

Prof. Andrews states that many of the beads had so far decayed that they could not be saved, and those collected show the action of fire upon them. Several are slightly warped or unrolled by the heat which was not sufficient to melt the copper, although the human bones, and wood surrounding them, were in places reduced to ashes. It is probably due to the fire and ashes that so large a number of copper beads with the other copper objects were so well preserved. The shell beads also show that they were subjected to great heat. The four hundred and eighty-two copper beads found in the mound were made in the same manner as the cylinders, already described, but they were formed from rather thicker pieces of copper, most of which were carefully cut so as to give even edges, and the length of each bead is about equal to its diameter. While many of them were made by simply rolling the copper so that one edge slightly overlaps the other, others show that the copper was rolled twice upon itself as represented in the foreground of fig. 5. Between these two extremes are many variations, but as a whole the beads are well made, and were probably hammered as they were rolled over a twig of hard wood. The largest in the lot is half an inch and the smallest is about one-quarter of an inch in length. They form a string ten feet and nine inches in length, and weigh one pound six ounces. Several in the lot have become firmly united by the corroding process, like the two shown on the right in fig. 5, which now have the appearance of one large bead.

FIG. 5.



No. 8992. Copper Beads found with burnt skeleton in the Connett Mound, Wolf Plain, Ohio.

A second form of beads, upon which much more labor was bestowed, was made by rolling up a small strip of copper, as in the case of ordinary cylinders, but these strips were first hammered so as to produce a thin edge on each side of a thicker central portion. A convex strip of copper was thus made, and when rolled up, so that one end slightly overlapped the other, a bead was formed which had a greater outside diameter in its centre than at each end, while

the hole through the bead was of a uniform diameter throughout. Two lots of such beads are in the Museum from mounds in Ohio.

No. 8945. In 1875 a mound about eighteen feet high, in Wolf Plain, Ohio, was partly removed in order to build a schoolhouse upon its site. About eight feet from the top of the mound and about fifteen feet from the outer edge on the northwestern side, the

FIG. 6.

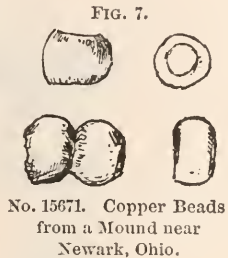


No. 8945. Copper Beads on piece of Leather. From Schoolhouse Mound, Wolf Plain, Ohio.

earth was found to be extremely hard and dry. In this dry earth, which probably had never been wet since placed on the mound, a fragment of an article made of the prepared skin of deer or buffalo, four layers in thickness, and eight or ten inches in diameter, was found. Upon the surface of this skin were probably two or three hundred of the carefully made convex-beads, which were strung

upon thongs of buckskin. The impressions of the beads on the fragment secured for the Museum by Prof. ANDREWS show that they were arranged in a symmetrical pattern over the surface of the skin as shown in fig. 6. Six of the seven beads still with the fragment are strung on two strips of buckskin and are considerably corroded. Prof. Andrews thought the object might have been a portion of an ornamental dress, but from the fact that the article was made of four layers of the dressed skin and that there are traces on the under side of a coarsely woven fabric of vegetable fibre, it seems to me probable that the fragment may have once formed a portion of a leather shield, the outer surface of which was ornamented by the hundreds of once bright copper beads. For the fragment in the Museum, represented in fig. 6, we are indebted to Mr. PETER MARTIN.³

No. 15671. Six beads of the same character as those found with the fragment of skin, were received in the WM. CLOGSTON collection, and are marked "From a mound near Newark, Ohio." These are much corroded but show more care in their manufacture than those from the schoolhouse mound. They are represented in fig. 7. The smallest is about one-fourth of an inch in diameter, and one-eighth of an inch long.



The beads which come under the third group are formed by coiling a piece of copper wire upon itself, like a spiral wire-spring. The wire was evidently made by rolling and pounding small pieces of native copper into compact masses of small diameter and of varying lengths. All of the beads of this character which I have seen were found in the Ancient Cemetery at Madisonville, Ohio, and are mentioned in the account of the explorations by the Madisonville Society.

No. 26619. With the copper cylinders mentioned under No. 26618 and forming part of the necklace represented in fig. 3, were thirteen of the spiral wire-beads and a few fragments of others. Six of them, as shown in the figure, are united into one corroded mass; the others are better preserved and show that they were

³For further details of this mound, see Prof. Andrews' account in Reports of Peabody Museum, Vol II, p. 65.

formed as described on the preceding page. In a few the wire is coiled twice or thrice upon itself, but most are made of a single coil. The wire is about the size of a pencil lead and the beads are about three-eighths of an inch in diameter.

No. 26613. On page 90, attention has been called to a number of copper objects found with the skeleton of a child during the Madisonville explorations, all of which are represented in fig. 4.

FIG. 8.



Nos. 26633, 26634. Copper Finger Rings found on finger bones of skeleton of a woman. Ancient Cemetery, Madisonville, Ohio.

Two of the objects there shown are probably portions of wire beads. The comparatively long undulating piece of wire represented on the right of the figure was probably once coiled up as a bead, and the semi-circular piece shown on the left is probably a portion of a large spiral bead.

FINGER RINGS.

Nos. 26633, 26634. On the finger bones of the woman buried with a child in the Ancient Cemetery at Madisonville, and referred to when describing the large lot of copper cylinders on page 92, were found four rings made of copper. These rings were on the first phalanges of the first and second fingers of each hand. The bones are colored green by the copper. The rings, two of

which are shown in fig. 8, are made of bands of copper three-quarters of an inch wide and two and one-half to two and three-quarters inches in length, which have been rolled up lengthwise with one end slightly overlapping the other. The rings thus formed are each about three-fourths of an inch in diameter. The native copper of which they were made has, in places, changed to azurite and malachite. The fingers of the woman were evidently long and slender, and all the bones of the skeleton indicate a rather slight person of middle age.

It is worthy of note that although nearly a thousand skeletons have been discovered in this old cemetery this is the only one with which finger rings have been found. That the custom of wearing rings was not very common among prehistoric people of the United States, is evident from the fact that this is the only instance which has come under my observation, although I have personal knowledge of the contents of several thousand ancient graves.

BRACELETS.

Several copper bracelets very similar in shape to the plain penannular bronze bracelets found in the old world, have been obtained

FIG. 9.



No. 1586. Copper Bracelet. From a Mound in Mt. Sterling, Ky.

from the ancient graves and mounds in the United States. One is in the Museum from a mound in Kentucky.

No. 1586. The bracelet under this number, shown in fig. 9, was received in 1868 through Prof. N. S. SIALER from JUDGE APPERSON, who presented it with several other articles from a mound in Mount Sterling, Kentucky, which was removed about twenty-five years before. This mound was about twenty feet high and one hundred in diameter. Only a single skeleton was found in it, with which were several stone implements, a broken pipe, a large copper "breast-plate," and the bracelet here recorded, besides other things which unfortunately have been scattered without a record having been kept. The bracelet is very much corroded and

has a thick coating of green rust. It is oval in shape, but the two ends are an inch apart. The longest outside diameter is about three inches, and the transverse is two inches. The piece of copper from which it was made was hammered round. The central portion is three-eighths of an inch thick, while the ends are only one-fourth of an inch in diameter.

FIG. 10.



No. 11832. Copper Cruciform Pendant. From a Stone-grave, Nashville, Tenn.

PENDANTS.

Under this heading I include such small ornaments as seem to have been worn about the neck, in most instances probably forming parts of necklaces.

No. 26614. The simplest pendant consists of a thin flat piece of copper rounded at the top and perforated for attachment by a string. This pendant formed part of the necklace found with the skeleton of a child, already referred to on page 91, in the Ancient Cemetery at Madisonville and is represented in fig. 4. This little ornament is very much decayed and broken on the edges, but when perfect it was seven-eighths of an inch long, and five-eighths wide. From such simple pendants there is a natural transition to the cruciform ornaments of which there are three specimens in the Museum.

No. 11832. The "cross," of which fig. 10 is a representation, I found in a stone-grave on the hill near Nashville, Tenn., on which Fort Zollicoffer was erected during the civil war. In the account of my explorations about Nashville in 1877, Annual Reports of the Museum, Vol. II, p. 307, I called attention to this ornament, which was found on the breast-bone of an adult skeleton. In the

same stone-grave, or cist, there were fragments of an earthen dish. On the surface of the copper, which is considerably corroded, there are traces of a finely woven fabric with which the ornament was in contact, and a minute fragment of string is still preserved just above the hole. The length of this pendant is five and one-fourth inches from edge to edge. In my remarks upon the origin of this form of ornament, I have stated that it seems to be a simple design to make and one of natural conception, and there seems to be no more reason for considering it a symbol of christianity than the "cross" on the tablet of Palenque. The modifications of this design, in the two other specimens, here figured, which have been since found in widely-distant places, seem to confirm this view.⁴

No. 22131. In this pendant as will be noticed by a glance at fig. 11, the "arms of the cross" are represented by simple notched projections from the piece of copper, the lower end of which is also notched. It is slightly over three inches in length and about three-fourths of an inch wide. One surface of this ornament is considerably corroded, and traces of what may possibly have been a woven fabric can be made out with a lens. It was found by Mr. EDWIN CURTIS in the Rose Mound, on St. Francis River, Arkansas.

No. 26620. The third cruciform ornament in the Museum was found with the skeleton of a child in the Ancient Cemetery at Madisonville, with several copper beads already described under numbers 26618 and 26619, and there can be but little doubt that it was the pendant of a necklace. The form of this ornament can be best understood by reference to fig. 3. It is about three inches long and one and one-half wide across the "arms." The copper has changed to a red oxide and has become very brittle. When found it was broken in two and bent and cracked across the lower portion.

FIG. 11.



No. 22131. Copper Pendant. From Rose Mound, St. Francis River, Ark.

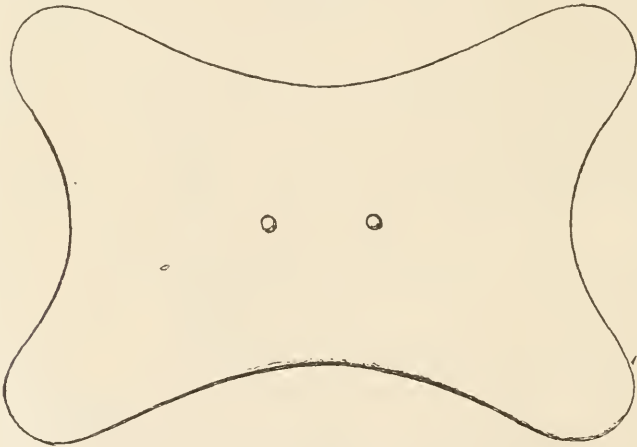
⁴ Since this page was put in type I have been informed by Miss ALICE C. FLETCHER, that the Sioux in some of their ceremonies draw the figure of a cross, which signifies the four winds, and it may be that the cruciform ornaments originated in this way and may have a special signification.

An ornament of a similar character, found with another skeleton in this ancient cemetery, has been figured in the Report of the explorations by the Madisonville Society, Part II, p. 34. In some respects this pendant is nearer in form to the one in the Museum from Arkansas. Dr. Joseph Jones has also figured a copper pendant, on which is a figure having the form of a cross, which was found with three others in a stone-grave in Tennessee.

BREAST ORNAMENTS.

There are several copper ornaments which I am inclined to class under this heading simply because some of them were found resting on the breast bones of skeletons, and because others seem to be better adapted to such use than for any other purpose. It is well

FIG. 12.



No. 1580. Copper Breast-ornament, $\frac{1}{2}$ diameter. Mound at Mt. Sterling, Ky.

known, too, that the custom of wearing ornaments of various kinds in this way is one of the most common and wide-spread among nations. Our present Indians are much given to hanging various objects about the neck and allowing them to rest upon the breast, and in many of the descriptions of the Indians by the early writers such ornaments are mentioned.

No. 1580. The large copper "breast plate" catalogued under this number, and shown of one-half its diameter in outline in fig.

12, was found in the mound at Mount Sterling, Kentucky, already referred to when describing the bracelet (No. 1586) on a previous page, and was also presented by Judge R. APPERSON. It is made of a large piece of native copper which was hammered until reduced to a nearly equal thickness of about a sixteenth of an inch. As there are no signs of overlapping along the edges it is hardly to be doubted that the concave edges and rounded corners, producing its symmetrical form, were cut after the copper had been reduced to its present thickness. Unfortunately its surface has been somewhat rubbed since it was found. The two holes in the centre of the plate were drilled from the side opposite to that shown in the figure, and looked at from that side there are signs of a very slight smoothing or wearing of the holes as if by use; but as such a heavy plate would probably be firmly attached to the string by which it was suspended, we could hardly expect to be able to detect decided signs of wear, and the slightly polished appearance of the holes may be the result of recent handling. The holes are one-eighth of an inch in diameter and just one inch apart. The distance from the edge of each hole to the concave margin above and below varies very slightly from one and one-half inches, and the distance measured to the side margin nearest each hole is exactly two inches, while the distance from the centre of either of the holes to the extreme edge of the two rounded corners nearest the hole is just three and one-fourth inches. The greatest length of the plate is six and three-eighths inches and its greatest width is four and three-eighths inches. Allowing for a loss of one-sixteenth of an inch in the process of rounding each corner and excavating the edges, we should have a plate of just six and one-half by four and one-half inches before the edges were cut and rounded.

Stone tablets of similar outline to this one of copper and with one or two holes, have been described as ornaments or as implements, according to the special fancy of the writer, and it is very likely that objects closely allied in shape may have served for various purposes at different times or with different peoples.

No. 12023. During my explorations of the ancient enclosure at Lebanon, Tenn., of which a detailed account is given in the Eleventh Report of the Museum, I found, in two of the sixty stone-graves contained in the burial mound, portions of two copper ornaments which have proved to be very interesting in show-

ing the advance the people of this old town had made in the art of working copper. These ornaments were found on the breast bones of adult skeletons in the graves, as mentioned on pp. 343-4 of Vol. II of the reports. The largest fragment obtained of one of these ornaments is shown in fig. 13. The several fragments saved of this interesting copper ornament show that it was circular in shape and from four to five inches in diameter, and that it was made of three layers of very thin copper, hardly thicker than ordinary writing paper, which were held together by small copper rivets passing through square or oblong holes cut in the thin plates of

FIG. 13.



No. 12023. Portion of Copper Breast-ornament, showing rivets. From a Stone-grave, Lebanon, Tenn.

copper. Two of these rivets are shown in the central portion of the figure with three others below them. The thin plates of copper, which are very brittle, have a distinctly corrugated surface which, while greatly increasing the general effect of the object as an ornament, must have added very much to the labor in making it. In the same grave were an earthen pot, and three small arrowheads beautifully chipped from a dark variety of chert.

No. 12021. The fragments of this specimen are extremely brittle, but they show that it was an ornament of about the same size and character as the one last described. The corrugations, how-

ever, are in the form of a series of concentric circles which are so evenly made that it seems as if they must have been formed over a pattern, possibly made of a coiled twig, like the bottom of a basket, over which the thin sheet of copper was placed flat and then pressed into the crevices. Some such process as this would produce the alternating rounded and grooved portions on the surface of the ornament. As already stated, I obtained this ornament from the breast bones of a skeleton in the same burial mound with the one last described, but it was in the lowest tier of graves and one of the oldest in the mound. The clavicles, sternum and upper ribs of the skeleton are colored green by contact with the copper. In the same grave were two vessels of pottery.

DRESS ORNAMENTS.

Among the copper ornaments in the Museum there are several thin and flat pieces which have two or more small holes as if for fastening to some other object, presumably some portion of a garment, head-dress, or a belt. These I bring together under this heading.

No. 15914. This specimen is simply a thin sheet of copper about four by four and one-half inches, which has been slightly folded over some object so that it is not quite flat, and the central portion has rather indistinctly outlined upon it a lozenge shaped figure, as if caused by pressure from the under or concave surface. Near the centre of the piece there are two small round holes about a quarter of an inch apart, and half an inch from them on one side are two others. By passing threads through these four holes the piece of copper could be firmly secured to any other object. Two opposite edges are still straight and but little decayed, but the other two are much broken and ragged, from decay of the metal, which has become brittle by oxidation. This simple ornament was probably hammered out of a sheet of native copper. It was found by the late Mr. EDWIN CURTIS while continuing the explorations at Old Town, Tennessee, under my direction, in 1878. The mound from which this was obtained was of the same character as those I have described in the second volume of Reports of the Museum, p. 311, as made up of stone-graves placed in several tiers. The mound at Old Town, which was on Mr. Gray's land, was sixty by eighty feet in diameter and contained about one hundred and fifty

graves arranged in four tiers. Over fifty other stone-graves were also opened in the immediate vicinity of the mound. The copper ornament was found in grave No. 120, in which the bones of the skeleton were so much decayed that none were saved, and no other things were in the grave.

No. 15947. The specimen under this number is only a small portion, about one inch by half of an inch in size, of a band of thin copper, in which is one of the holes by which it was secured to some object. It was found in grave No. 107 of the mound on Mr. Gray's farm at Old Town, and with it were three stone implements, several shell beads, the teeth of a comb made of bone, and pieces of mica.

No. 17280. On the farm of Mr. Rutherford in Sumner Co., Tenn., there was a collection of about one hundred stone-graves within a circular enclosure of earth, and about twenty more were found just outside the embankment. These graves were all opened by Mr. CURTIS and in three of them copper objects were found. Grave No. 63, within the enclosure, contained two skeletons and with these were about twenty small and much decayed fragments of what seem to be the remains of a thin copper band. No other object was found in this grave.

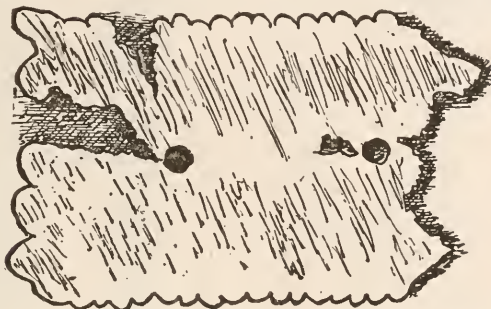
No. 21454. From one of the graves in the Fortune Mound on the St. Francis River, Arkansas, Mr. CURTIS obtained a pottery dish, on the edge of which, and forming a handle, was represented the head of a bird; also a small pot colored red, and three fragments of a small copper band about three-quarters of an inch in width and probably when perfect about two inches long. These fragments are thin and brittle but in one of the holes in one fragment, partly covered with a deposit of the copper, is a minute bunch of twisted vegetable fibres. Both of the other fragments are perforated, one in two places, and the other in one. One of the fragments shows that it was made of two layers of thin copper.

No. 21594. In a grave three feet from the surface of a burial mound on Mr. Halcomb's land on the St. Francis River, Ark., Mr. CURTIS found the anterior portion of the skull of an adult person, across the frontal bone of which was a band of thin copper about one inch wide and three inches long, with two small holes at each end by which it was probably fastened to some kind of a head-dress or fillet. The place on the skull where the copper was lying is colored green and there can be no doubt in this instance of the

use to which such bands were sometimes put. In the same grave was a perfect vessel of pottery.

No. 11017. Among the interesting results obtained by the late Professor E. B. ANDREWS during his explorations of mounds in

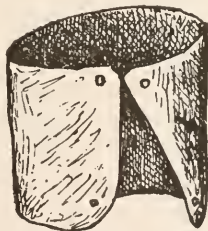
FIG. 14.



No. 11017. Copper Ornament found with burnt human bones in the Connett Mound, Dover, Ohio.

Ohio, for the Museum, were those in connection with the "large mound" on Mr. Woodruff Connett's farm in Dover, Athens Co., a full account of which is given in Vol. II, p. 71, of the Museum Reports. This mound was eighteen feet high and eighty-five feet in diameter. It contained two deposits of burnt human bones, in the lower of which, and at the very bottom of the mound, were found two copper ornaments which had been burnt, evidently at the time the body was cremated, and were collected with the burnt bones over which the mound had been erected. One of the ornaments is a thin and much decayed band of copper about three inches long and one and one-half in width, with serrated edges and two perforations. The illustration given in Professor Andrews' report is here reproduced as fig. 14.

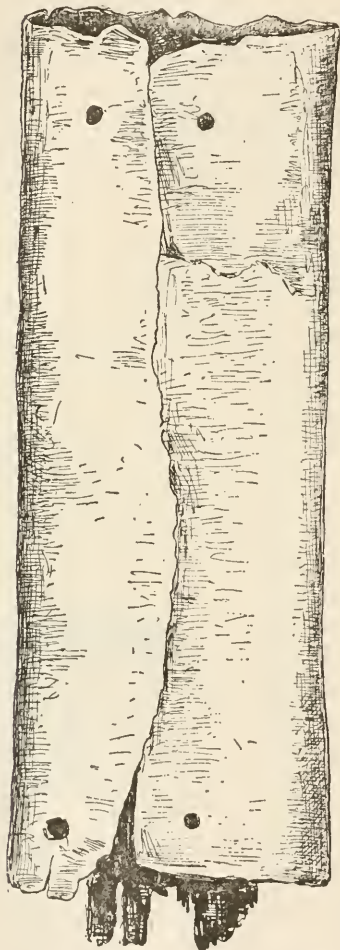
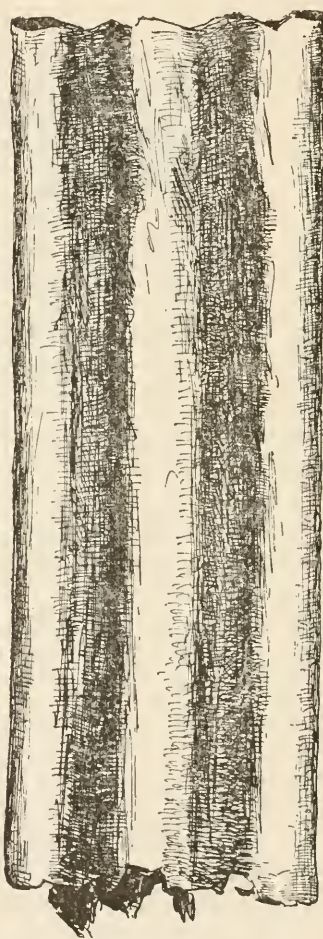
FIG. 15.



No. 11016. Copper Band found with burnt human bones in the Connett Mound, Dover, Ohio.

No. 11016. The figure of the other copper ornament found with the burnt bones and referred to in the last paragraph is reproduced here as fig. 15. This consists of a copper band folded upon itself, which was probably fastened through the four holes at the corners. It is slightly more than one inch in width and about the

same in its longest diameter at the end where the corners meet. Professor Andrews has suggested that it might have been an ornament fastened to the hair. A tube about six inches long and finely

FIG. 16, *a*.FIG. 16, *b*.

No. 18313, *a* and *b* opposite surfaces, Copper Band. From Mound, Franklin, Tenn.

made of oölitic limestone was also found with the burnt bones and these two copper ornaments.

No. 18313. In 1879, Mr. CURTIS opened a mound on the farm of Mr. F. S. Glass, in Franklin, Tenn, which was twenty-one feet

high and of a similar character to the one just referred to in Ohio, inasmuch as the deposit of human bones found in it were the remains of a body which had been cremated, and this mound was also remarkable for the several copper objects which it contained. Eight feet from the top of the mound were the burnt human bones, principally fragments of the cranium, with which were found the spool-shaped objects (18310) described farther on, and two small shell beads. Near the bottom of the mound, in the centre, was a large piece of mica, and six inches under the mica, in a bed of ashes, were the copper axe described under No. 18314, and the copper band represented of full size by the two views in fig. 16. Just under the ashes, at the very bottom of the mound, was a small cavity covered by a stone, in which was a small amount of red oxide of iron and a large piece of mica. At various depths in the mound, there were found a bone implement, a large crystal of galena, a piece of burnt limestone, a small mass of burnt clay, and a number of animal bones which were not burnt.

The copper band is four and one-half inches long and a little over one and a half inches wide. It is very brittle and at both ends on the grooved side the copper has turned to a green carbonate and is considerably decomposed. This band was probably made from thin sheets of native copper which were pounded together, and in some places two layers of copper can be traced by the laminations, although its thickness is not more than double that of good letter paper. The sheet of copper thus prepared was a square of four and one-half inches. Two deep grooves were then made parallel to each other, and extending the whole length of the piece, leaving a central raised portion about a quarter of an inch wide, between them as seen in fig. 16, *b*.

The band seems then to have been folded over a piece of wood half an inch in thickness, to which it was secured, as indicated by four holes at the corners where the band overlaps, on the surface opposite the grooves, as shown in fig. 16, *a*. Portions of the wood are still preserved within the band.

Of course it is impossible to determine the exact use to which such an object as this was put, but it seems probable that it was an ornament of some kind, and it is not unlikely that it was attached to a belt or some other part of the dress of the owner.

TUBES.

No. 8993. On page 92 reference has been made to the exploration of a mound on Mr.

FIG. 17.



No. 8993. Copper Tube. From the Connett Mound, Wolf Plain, Ohio.

George Connett's land on Wolf Plain, Ohio, by Prof. ANDREWS in which were found, in connection with burnt human remains, a large number of copper beads, described under No. 8992.

In the ashes near the middle of the burnt skeleton, Prof. Andrews found the copper tube described by him on page 61, Vol. II, of Reports of the Museum. As the reduced figure given on that page is not quite correct it is here represented of full size as figure 17. Prof. Andrews thought that this tube was made by first cutting the flat sheet of copper, which is about a sixteenth of an inch thick, so as to leave it much wider at the flattened end, but it seems to me more probable that the copper sheet was of about equal width throughout, and that it was simply rolled upon itself until one edge overlapped. The overlapping edge was closely united to the other by hammering over a piece of hard wood placed in the tube. One end of the tube was then flattened and widened by hammering, the central portion being kept open, and the end

turned over, thus closing the tube at one end, but through the copper at this end a hole about one-eighth of an inch in diameter was cut, or punched, a little to one side of the centre. The tube so formed is very evenly and symmetrically made, and is five and a half inches long. It is three-quarters of an inch in diameter in the circular portion and two inches wide at the flattened end. The copper is much oxidized and in places has changed to a green carbonate.

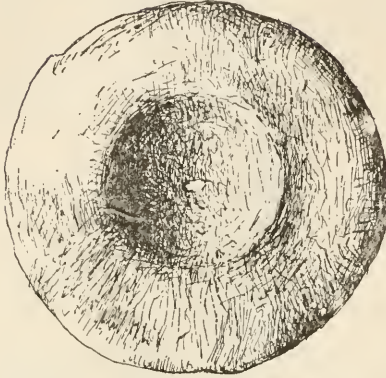
We do not know the purpose for which stone and copper tubes, of the general shape of the one here figured, were made. They were probably ornaments, but as their shape closely resembles that of the tubular smoking pipes, we must not overlook the possibility of their being pipes. Although the form of the tube here described may seem inconvenient for a pipe, yet if it were fitted with a mouth-piece of wood or bone, it would be as well adapted for smoking as the conical tubes of stone found in California graves, which are unquestionably pipes.

SPOOL-SHAPED ORNAMENTS.

Among the copper objects found in the mounds from time to time, exhibiting careful and painstaking work, are the several ornaments which, for want of a better name, have been designated "spool-shaped." The use made of objects of this character has not yet been determined. Were they from Mexico or Peru they could with reason be considered as ear ornaments, similar to the large disks represented in the ears of men in the ancient terra-cotta figures from both these countries. While they resemble such objects however, it is hardly probable that they were so used, for in the human figures in terra-cotta which I have seen from the mounds and stone-graves in the United States, the ears are represented as pierced with small holes for the suspension of objects, and not one shows anything placed in the lobe of the ear, so common in the terra-cottas from Mexico and Peru. They could have been fastened to the ears, however, as pendants, and both specimens before me have a mass of fibre wound about the central axis, over which are the remains of buckskin strings, one of which still shows a loop as if to suspend the ornament, but this will not warrant their classification as earrings until other facts indicating their use as such are obtained, and it will be best for the present

to continue to call them "spool-shaped" ornaments, as Dr. Rau

FIG. 18, *a*.



No. 18310. Outer surface of upper half of a Copper Spool-shaped Ornament. From Mound in Franklin, Tenn.

has designated the one he has figured in the account of the collection of the National Museum.

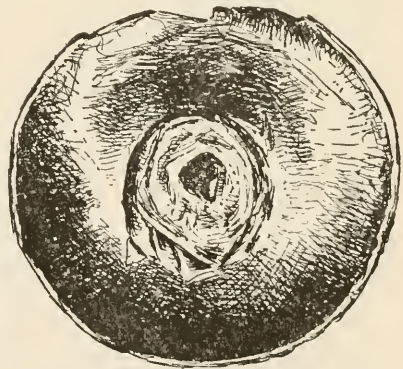
No. 18310. The two ornaments recorded under this number were found by Mr. CURTIS in the mound on the farm of Mr. F. S. Glass, in Franklin, Tenn., of which a brief account has been given on pp. 106 and 107. They were discovered about eight feet from the surface of the mound, near some burnt human bones, principally con-

sisting of small fragments of a cranium.

These objects exhibit a degree of skill in working copper into symmetrical forms which goes far to prove the advance that some American tribes had made in the ornamental arts. The method of their manufacture seems to have been nearly as follows :

A circular piece of copper was hammered over a wooden pattern, until the metal was shaped into the concavo-convex form shown in fig. 18, *a*, outer surface, and 18, *b*, inner surface (natural size). Two such circular pieces formed the upper and under portions of the ornament and were held in place by being closely fitted and slightly folded over two similarly shaped but smaller pieces. These two inner pieces were held together by passing a cylinder of copper through holes punched in

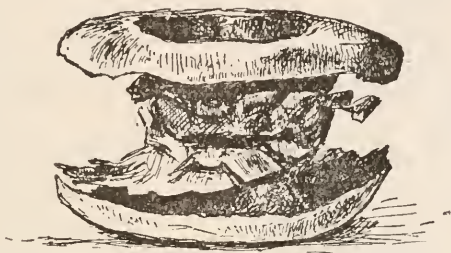
FIG. 18, *b*.



No. 18310. Inner surface of lower half of a Copper Spool-shaped Ornament, showing the fibre wound around the central portion. From Mound in Franklin, Tenn.

their centres, the ends of which were clinched before the outer pieces were put on. As a further means of securing all the parts firmly together a small and thin cylinder of copper, closely fitting the margins of the holes in the upper and lower pieces, was passed through the connecting cylinder, and forced apart a little at each end so as to hold firmly the outside pieces like a hollow rivet. Around the central axis of each specimen a fine vegetable fibre has been closely wound, increasing the diameter of the axis to

FIG. 19.



No. 1s310. A Spool-shaped Ornament of Copper, showing the fibre and strip of buckskin wound and tied about the central portion. From Mound in Franklin, Tenn.

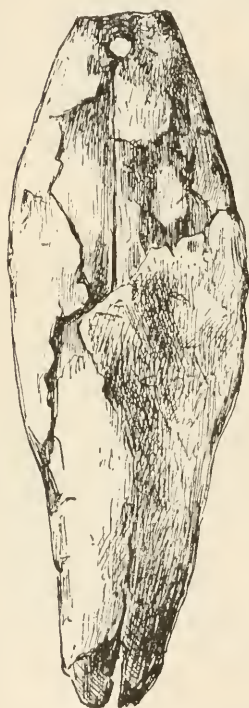
about five-eighths of an inch and around this, in both instances, a piece of prepared skin has been wound and tied, as shown in fig. 19, which represents the smaller of the two specimens of natural size. In this specimen the buckskin thong ends in a loop as if for suspension of the object. The copper of which these ornaments were made is now very brittle and has turned into a green carbonate. The fibre and skin about the central axis have been preserved by the action of the copper upon them.

COPPER-SHEATHED ORNAMENTS.

The great value of copper in ancient times in North America is apparent from its being so extensively employed for ornaments; but of all its adaptations for ornamental purposes, there are none which show better that the soft and malleable nature of the metal was understood than the copper-covered wooden objects of various shapes which have been found in the mounds and stone-graves. The copper with which these wooden objects were sheathed was hammered into very thin sheets and folded closely over the wood.

In every instance that has come under my observation the alteration of the thin plates of native copper to the green carbonate of copper is complete, and although the metal has become very brittle, and has in some instances nearly disappeared by oxidation, its penetration of the wood has been generally sufficient to preserve the form of the object.

FIG. 20.



No. 14119. Ear-ornament of Wood, covered with Copper. From a Stone-grave on the Big Harpeth River, Tenn.

Great care is necessary, however, when taking such ornaments from the graves and in handling them afterwards.

These ornaments are not only interesting from the manner in which the copper was used, but equally so in furnishing the evidence that wood was carved; and from the few wooden things thus fortunately preserved we certainly have the right to draw the inference that wood was probably largely used for other purposes, as it is more than probable that a people who could cut and carve wood into shapes such as these would also make use of it in many other ways. Although the specimens of these copper-sheathed ornaments could be grouped as beads, earrings, and button-like ornaments, I have thought it best to bring them together for the purposes of description under one heading.

No. 14119. There can be but little doubt from their character, and from the positions in which they were found, that the two remarkable objects recorded under this number were attached to the ears of the person with whose skeleton they were found, one on each side of the skull. The stone-grave from which

they were taken was one of a number in a mound which was situated on the bluff of the Big Harpeth river, two miles above Bell's Iron Works, and was opened in 1878 by the late Mr. EDWIN CURTIS, while continuing the explorations in Tennessee under my direction. Their shape will be better understood by a glance at figs. 20 and 21. They are made of wood which, after being carefully

shaped and smoothed, was split lengthwise for the purpose of making a symmetrical and smooth oval cavity, as shown in fig. 21, *a*, and 21, *b*. In this cavity small pebbles of quartz were placed, as represented in fig. 21, *b*, which would give a slight jingling sound as the head of the wearer was moved about. The two pieces were then put together and held in place by a

FIG. 21, *a*.FIG. 21, *b*.

No. 14119. Ear-ornament of Wood, covered with Copper, showing cavity cut in the wood and containing quartz pebbles. From a Stone-grave on the Big Harpeth River, Tenn.

covering of very thin plates of copper, which were firmly united by pounding and rubbing until an even and smooth surface was secured. Through the upper end a hole was made by which the pendant was fastened to the ear. The copper covering has become detached in places and on some portions has nearly disappeared by oxidation, leaving a green stain on the wood. The shape, symmetry, and skill displayed in these ear-pendants

are evidence of thoughtful design and careful and laborious execution. They are, also, so far as I can recall, the only ancient ornaments found in the United States which can be classed, almost beyond question, as earrings, using that term for all ornaments in any way fastened to the ear. I have already called attention to the custom of perforating the ears as shown in the ancient pottery from the mounds, and I may add that a fine large jar in the Museum, which was found in a mound in Arkansas, represents a human head with the rim and lobe of the ear perforated in six places as if for the purpose of attaching many ornaments.

These ear-pendants are each three and a half inches long by one and a quarter wide, and not quite an inch in thickness through the central portion. Not over an eighth of an inch in thickness is left in that part of the wood hollowed for the reception of the pebbles.

FIG. 22.



No. 22132. Copper-covered Ornament.
From the Rose Mound, Ark.

Each pendant is curved at the small end which gives a finish to the ornament not shown in the illustrations.

No. 22132. In the same mound on the Rose plantation on the St. Francis river, Arkansas, in which the cruciform pendant No. 22131 was found, Mr. CURTIS obtained, four feet from the top of

the mound, the copper-covered object catalogued under this number. It was not found associated with the bones of a skeleton, but on a mass of ashes in a place where the clay comprising the mound had been burnt red. Several such fire places were found in the mound. In shape this is identical with several of the large ear ornaments represented upon pottery figures from Central America and Peru, and had it been found in either of those countries I should have little hesitation in considering it an ear ornament; but, as already stated, I do not know of any facts to show that such ornaments were worn in the ears of the people who made the mounds in our western and southern states. It must therefore remain for the present in the group of ornaments about which we hope for more information. It is made of a cylindrical piece of wood which in its present dry and shrunken condition is about half an inch in diameter at the smallest end, and nearly an inch measured at the rim of the rounded or convex portion, as shown in fig.

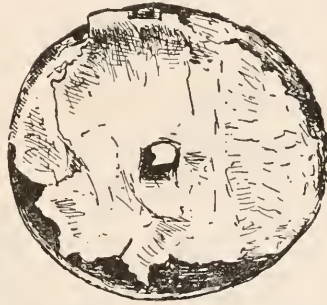
22. Over this wood three pieces of thin sheet-copper have been wrapped. One piece covered the convex portion with its edges folded down over the rim of wood. The second piece was about an inch and a quarter wide and was rolled about the smaller portion extending from the rim to the opposite end. The third piece covered the small end. The wood was thus completely enclosed by copper, but the metal has changed to a green carbonate and in some places has disappeared, leaving a green stain on the wood. About the part close to the rim a string had been wound, as shown by the minute portions of copper-charged vegetable fibres which are faintly indicated in the illustration.

No. 21520. A thin piece of wood, preserved by the action of copper upon it, was found by Mr. CURTIS in a mound on Mr. Fortune's place in Cross Co., Arkansas, in connection with a human skeleton and a spoon carved from the shell of a *Unio*. As this bit of wood seems to be a portion of a circular disk, it is very likely the remains of one of the button-like objects such as are mentioned farther on from the stone-graves in Tennessee.

No. 11364. A thin piece of copper, about one inch in length and half an inch in width, which seems once to have been part of the covering of a convex surface, was found in a grave near Gibson's Station, Virginia, in 1876, by Mr. C. B. JOHNSON, who presented it to the Museum.

No. 18479. In 1879 Mr. CURTIS opened about seventy stone-graves on the farm of Mrs. Williams in Dover, Tenn., from which many things of interest were obtained. In grave No. 8 of this lot, two circular pieces of wood, about an inch and a half in diameter and an eighth of an inch in thickness, were found with the human bones. One of these is shown in fig. 23. These disks are covered with thin copper on one surface only, the edges of which were folded over the wood. It may be that the two disks, which are of the same size, were fastened together by something passing

FIG. 23.



No. 18479. Wooden Disk, covered with Copper on one surface and stained red on the opposite. From a Stone-grave on Mrs. Williams' farm, Dover, Tenn.

through the hole in the centre of each, but as the surface opposite to the one having the copper upon it, in both instances, is stained with a red pigment, as if they were once painted, it is as probable that each disk formed a separate ornament.

No. 18467. In grave No. 57 of the lot opened on Mrs. Williams' farm, mentioned on the preceding page, Mr. CURTIS found a piece of copper-stained wood, which seems to be a segment of a disk which was two inches in diameter, and a quarter of an inch in thickness. On one edge of the fragment two small bits of copper still remain, showing that the wood was probably covered with the metal. In the same grave were fifteen beads made of shell, and a piece of white quartz⁵.

No. 17248. In the fourteenth grave of the lot of about one hundred inside the earthwork on Mr. Rutherford's farm, in Sumner Co., Tenn., of which mention has been made on p. 104, were found a

FIG. 24.



No. 17248. Stud-like Ornament of Wood covered with Copper on its upper surface. From a Stone-grave, on Mr. Rutherford's farm, Tenn.

shell bead, two vessels of pottery—one of which was a jar, the upper part representing the head of an owl—and the stud-like ornament recorded under this number. Fig. 24 represents the object as seen in profile, but the broken edges of the wood, and the crumbling copper-covering of the upper part make it difficult to represent it in a satisfactory way without exaggerating by giving smoother lines than now exist. The upper portion of this stud-shaped piece of wood is circular and regularly convex, and is covered with a very thin piece of copper which is folded over the upper edge made by the groove separating the upper from the lower half of the stud. The lower portion of the wood, not having been covered with copper, is somewhat decayed and irregular, but it evidently was once a thin circular base. It is about three quarters of an inch in diameter and one quarter of an inch in thickness. A hole about the size of a pencil-lead passes through the centre from top to bottom.

No. 18414. On the Perkins farm on the Cumberland River, about one hundred miles below Nashville, Mr. CURTIS explored a small burial mound containing about forty stone-graves, ar-

⁵ On page 45 of his "Explorations of the Aboriginal Remains of Tennessee," Smithsonian Contributions, 1876, Professor Jones mentions copper-covered objects of wood which he found in stone-graves near Nashville.

ranged as already described on p. 103. In one of these graves he found two spherical beads cut from wood, one of which is represented of natural size in fig 25. These wooden beads were once sheathed with thin copper, as shown by the minute fragments of green carbonate of copper still remaining upon them, and the green stain over the wood. The beads are carefully made, and are fine specimens of wood cutting. The hole passes lengthwise through the bead, and is three-sixteenths of an inch in diameter.

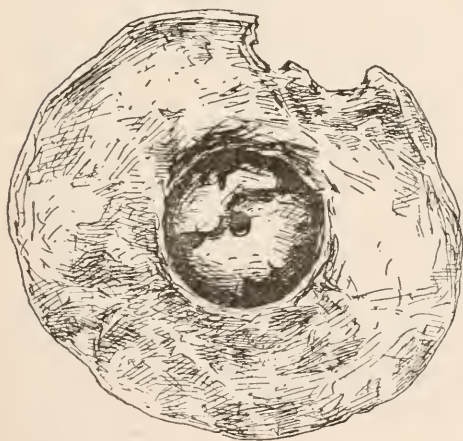
FIG. 25.



No. 18414. Wooden Bead.
Copper stained. From
Stone-grave in Mound
on Perkins' farm, Tenn.

No. 11837. In the fall of 1877 I explored a large mound on the estate of the Love family near Nashville, Tenn., of which a short account is given on page 357 of the second volume of Reports of the Museum. Near this mound there were formerly many stone-graves. This old cemetery had long been

FIG. 26.



No. 17264. Ornament of Buffalo-horn, Copper and
Wood. From a Stone-grave on Mr.
Rutherford's farm, Tenn.

ment about three-quarters of an inch in length.

No 17264. An ornament of great interest, and the only one of the character of which I have knowledge, was found by Mr. EDWIN CURRIS in the thirty-third stone-grave which he opened inside of the earthwork on Mr. Rutherford's farm in Sumner Co., Tenn.

ploughed over and fragments of human bones and pottery were scattered over the field. There was one grave, however, that had not been disturbed. On examination of this grave I found the skeleton nearly decayed, but close to the remains of one of the temporal bones there was a small circular mass of green carbonate of copper, which seemed to be the remains of a copper-covered wooden bead or spherical orna-

Reference has already been made to this burial-place when describing the objects under Nos. 17248 and 17280. In the same grave with this ornament were the shell of a *Busycon*, several shell-beads, a small stone-disk, a crystal of quartz and one of galena, several small stones, fragments of shells, and broken bones of animals.

Fig. 26 represents the outer surface of the ornament of full size. The under portion, or base, is made of a disk of wood, one and three-quarters inches in diameter and one-eighth of an inch thick, from which there rises a central boss about an eighth of an inch. The upper surface of the wood is covered by a thin sheet of copper folded over the edge of the wood into a groove. Through the centre of the boss is a small hole. Over this copper-covered surface was placed a circular piece of buffalo horn, nearly two and a half inches in diameter, and not over a sixteenth of an inch thick. The central portion of this disk of horn has been evenly cut out, leaving a hole seven-eighths of an inch in diameter, through which rises the copper-covered boss of the wooden disk. The copper on the wood is now much decayed and turned to a green carbonate, and the horn has become dingy and stained; but when placed in the grave this object was probably one of considerable beauty as well as of complicated design, and is another instance of the skill and labor bestowed on personal ornaments by the people who buried their dead in the stone-graves of Tennessee. The broken edge of one portion of the disk of horn is probably the place where two holes were made for suspending the object, and as a few fragments of horn were found with it, which seem to have been detached from this portion, there may have been a slight projection of horn at that part of the disk. The under surface of the wood is rough, and it is probable that it was fastened to some material which has since decayed.

IMPLEMENTS.

Under this heading I record the few copper implements in the Museum from North America, without the limits of Mexico. Beyond question they are all made from masses of native copper, simply by hammering, as shown by the laminations, or by the irregularities of the surface so characteristic of small masses of the native metal. It is probably in part the irregular and granulated surface

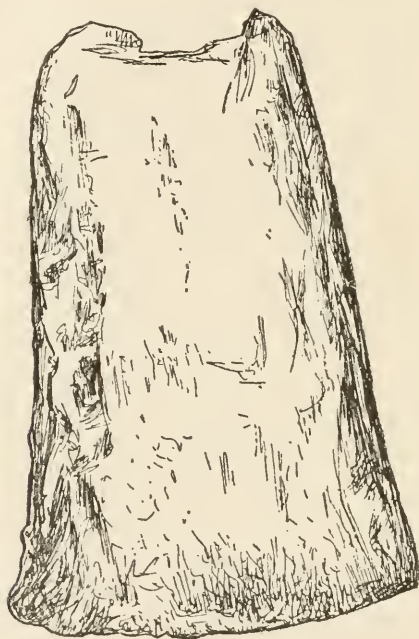
of the native copper, and in part the oxidation of the metal, that has led to the inference that some of the copper axes were cast. Mr. E. G. Squier, on page 78 of his excellent memoir on the Aboriginal Monuments of the State of New York, published in the Smithsonian Contributions, Vol. 11, 1850, has given a figure of a copper axe ploughed up in Cayuga county, N. Y., of which he says "from the granulations of the surface, it appears to have been cast in sand," and argues that it was either obtained from Mexico or Peru, "or made by some Indian artisan after intercourse with the whites had instructed him in the art of working metals." A careful study of all the copper implements I have seen, in many collections in the country, has convinced me that what Mr. Squier has considered as evidence of casting in the specimen he describes is the natural surface of the copper, from the reasons stated above.⁶ A very interesting copper axe in the State Geological Museum of Indiana is of particular value in showing the primitive way of treating copper, as this specimen was evidently made from a mass of native copper, which, while it was furnished with an edge by hammering and rubbing, has a groove around the central portion, apparently made by pecking in the same way that the grooves about many of the stone axes were formed. Some writers have suggested that many of the copper axes were made by placing a mass of native copper in a form or mould cut in stone, and then hammering the metal until it assumed the shape of the mould. This, however, implies a far greater labor than is necessary to accomplish an end which could as well be reached by simply hammering the mass into shape on any flat stone; and until we find at least two specimens of exactly the same size and shape, bearing evidence of being produced in that way, it is not necessary to look beyond the most simple means for the formation of all the implements of copper that I have seen.

No. 15398. This copper axe was received in a collection made by Mr. WM. CLOGSTON, and the only information we have regarding it is that it was found in Lewiston, Maine. I know of three

⁶ Since this was put in type, I have received from Dr. Chas. Rau a pamphlet containing a reprint of his papers with a number of notes in the preface. In one of these notes Dr. Rau states that he saw the axe in question several years since, and that a portion of it had been cut off by an expert for examination, which had proved it to be made from native copper, simply by hammering.

other similar copper axes found in New England, and there is no reason to doubt that this was obtained from Maine. It very closely resembles the axe found in Cayuga county, N. Y., to which I have referred above as described by Mr. Squier. It is three and a quarter inches long by two and a quarter in width across the edge, and a quarter of an inch in thickness in the middle. Fig. 27 represents the implement of full size and shows its

FIG. 27.



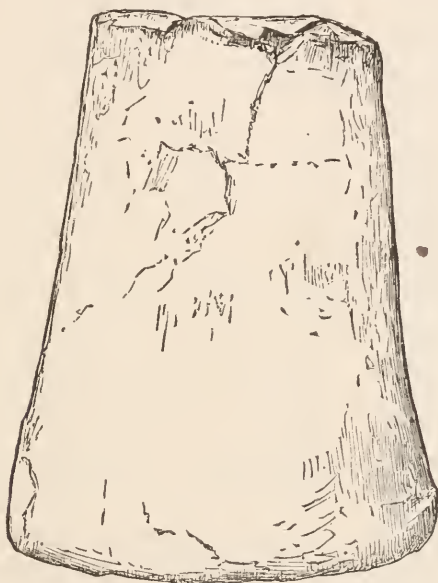
No. 15398. Copper Axe. From Lewiston, Me.

irregular outline. In producing the edge the hammering was more on one side than the other, and either the maker was satisfied with a very blunt edge or else it has been dulled by use. The signs of hammering are distinctly traceable in the lateral expansion of the blade, and in the foldings along the edges of the two broad surfaces. The end opposite to the cutting edge is wedge-shaped, and slightly grooved, as shown in the figure. The whole surface is very much corroded and, except where it seems to have been recently rubbed off in cleaning the

specimen, is covered by a green carbonate. The original irregularities of the mass of native copper, from which it was made, though reduced by hammering and oxidation, are in places distinctly traceable. Judging from its shape, this little axe was probably fixed to a wooden handle by passing it through a slit in the wood and then lashing it into place.

No. 18314. A small copper axe, of much better finish than the last, was found by Mr. CURTIS in the mound on the farm of Mr.

FIG. 23.



No. 18314. Copper Axe. From Mound in Franklin, Tennessee.

Glass in Franklin, Tennessee, to which reference has already been made on pages 106, 107, 110. This specimen is represented of its full size in fig. 28. It is a quarter of an inch thick in its central part and about half as thick at its flat end or head, which distinctly shows where the ragged edge of the mass of copper from which it was hammered out was turned over and hammered down as represented in the figure. The edge is two and a quarter inches wide, well formed, and finished by hammering equally on both sides. Its length is two and three quarters inches. On both broad surfaces distinct laminations of the copper can be traced,

although the places where they occur have been very much hammered so as to connect the laminations firmly with the rest of the mass. The front and back edges are smooth and flat. There is a slight battering of the cutting edge as if from use, and over the whole surface of the implement, which was made very smooth by hammering, the metal has changed slightly to a green carbonate.

FIG. 29.



No. 2949. Copper Axe, $\frac{1}{2}$.
From Lick Creek Mound,
Tennessee.

No. 2949. The long slender copper axe catalogued under this number could as well be called a chisel, were it not that the cutting edge has been expanded laterally by hammering, in the same way as in the two small blades previously described, and from the resemblance it has to them except in its length. Fig. 29 represents the implement of one-quarter size, or of one-half its length and width. The measurements are: length, seven and three-quarters inches; width at the blunt end, one and a half inches, in the middle, one and three-quarters, and across the cutting edge a little more than two and a quarter inches. Its greatest thickness in the central portion is a little less than a quarter of an inch, and at the blunt end is slightly less. It is very roughly made, evidently from an irregularly shaped sheet or rather thin mass of native copper which has been folded over and hammered together, leaving the laminations and the line of union where one portion of the copper was folded upon another distinctly defined, as shown in the figure. The cutting edge was made by pounding on both sides of the blade and is slightly expanded by this process. One corner has been

broken off and is battered as if by use.

The surface of the copper appears to have been partially protected, as in places it remains smooth and is of the natural red-copper color, while other parts are changed by oxidation and the surface has turned to a green carbonate. Over about one-half of the flat surface, opposite to that shown in the figure,

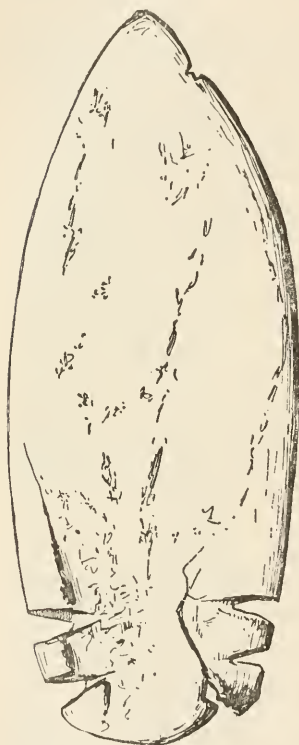
there are many very fine lines in relief which, under a powerful lens, have the appearance of delicate feathers, and it may well be that the implement was enclosed in wrappings of which the skin of a bird made a part, in a similar manner to some of the copper axes found in Illinois, described and figured by Dr. Farquharson, which were wrapped in cloth. This rude but interesting implement was found by the Rev. E. O. DUNNING in 1871, while making explorations for the Museum in eastern Tennessee, of which an account is given in the Fifth Annual Report, page 11. The mound in which this axe was found is known as the "Lick Creek Mound." It is situated about fifty yards from the Creek, near its junction with the Nolachucky River. It was originally about thirty feet high and seventy-five feet in diameter. The remains of about sixty skeletons were found in the mound and with them a large collection of objects of various kinds, including pottery, pipes, carved shells, a great quantity of shell beads and many stone implements, of which an account is given in the report referred to. In the centre of the mound the remains of two chambers, or tombs, apparently made of cedar logs, were found, one above the other a few feet apart, and in each were the remains of a single skeleton. With one of the skeletons the copper axe was found with a number of other articles. It is unfortunate that the exact position and the association of the many objects are not indicated in the account of this mound, from which so many interesting things were obtained.

No. 26482. During the present year the ABBOTT Collection in the Museum has received many interesting additions and among them are two copper spearheads which were found by Mr. F. DE COU in a field near Dr. Abbott's house. These are the first copper implements found in the vicinity, although thousands of stone implements have been collected in the same and adjoining fields, the relics from which have become so well known through the researches and writings of Dr. Abbott, and the collection he has made for the Museum.

In their general shape and in having notched tangs, these spearheads closely resemble one in the State Historical Society of Wisconsin, figured by Dr. Emil Schmidt, Plate IV, fig. 11, but the Wisconsin specimen has the point serrated while in those from New Jersey the edges are smooth. Fig. 30 represents one of the spears of full size, and it will be noticed that it resembles many of the large, leaf-shaped points chipped from chert and jasper which

have been found in various parts of the United States. This specimen was dug up while cultivating the field. It was made from a mass of native copper, hammered into shape, as shown by several small laminations which can be distinctly traced notwithstanding the surface was pounded quite smooth and flat. The edge was afterwards sharpened all around, including the base of the tang,

FIG. 30.



No. 26482. Copper Spear. From
Trenton, New Jersey.
Abbott Collection.

by rubbing on a stone. The two deep notches on each side defining the tang, and indicating that this point was fastened to a shaft by lashings, were evidently cut after the edge had been sharpened. On the surface of the left lower portion, there is a slight ridge which was probably formed by the rolling up and breaking off of a small thin layer of copper. The base on the right has at some time been torn by a blow which has caused a fracture extending nearly to the end of the lowest notch on that side and almost detaching the piece. On a line with this fracture there is a slight indenture which leads me to think the fracture was caused by a plough, although this portion is as much changed as the rest by oxidation. The notch near the point is probably due to a natural fold in the copper which broke out in hammering. The original native copper has become partly changed to the green carbonate and red oxide, and over the surface are many little granulations, as if grains of sand had become fastened

to the metal by the oxidation of the copper. The specimen is three and seven-eighths inches long, and one-eighth of an inch in thickness except where the edge has been rubbed down.

No. 26480. The second spearpoint received from Dr. ABBOTT was ploughed up within a few feet of the place where the other was turned out with the spade, and it is very likely that they were

once together in a grave and became separated during the long cultivation of the field. This spear is longer and more slender than the one just described, and also differs from that in having a raised central ridge its whole length on one side, as shown in fig. 31. The opposite surface is flat with the exception of a slight concave portion about an inch in length at one side of the centre, where the copper is not quite as thick as in other parts. It was evidently made from an irregularly shaped and thin mass of native copper which had been folded upon itself and hammered until the edges were closely united, but their lines of union can be traced in several places, particularly along the edge represented on the left in the figure, and on the lower part of the tang, where a portion of one layer of the metal has been detached. The central ridge was probably formed by pounding the copper towards the centre while forming the thin and comparatively sharp edges. The point is rounded and shows signs of considerable wear. As will be seen by reference to the figure the tang has three broad notches cut upon one side and two upon the other, with two small indentations below them as if the tang had once been symmetrical but had been broken in use. The implement is four and one-fourth inches long, one and three-eighths wide in the centre and about three-sixteenths of an inch in thickness measured through the central ridge.

FIG. 31.



No. 26480. Copper Spear. From
Trenton, New Jersey.
Abbott Collection.

No. 4903. This long and pointed implement may be classed as an awl, or a pin. It is ten and a quarter inches long and was made by pounding a mass of native copper so as to form an implement with a square end and four flat surfaces, each one-eighth of an inch wide, for half its length, then rounding the copper and gradually

FIG. 32.



No. 4903. Copper Awl or Pin, $\frac{1}{2}$.
From a Mound
on the Detroit
River, Mich.

FIG. 33.



No. 2180. Copper
Harpoon-point.
From Alaska.

producing a point at the opposite end. In a portion of the rounded part there are two splits in the copper where portions have separated, as shown in fig. 32 which represents the specimen of one-half its length and width. It has a thin coating of green carbonate of copper. This implement was found by Mr. HENRY GILLMAN in the mound on the Detroit River, Michigan, from which was obtained the singular human cranium already alluded to on page 88 when describing the copper beads No. 4898.

No. 2180. In the collection of objects from Alaska, there are three harpoon points made of native copper by the present Indians. They are of particular interest as reproductions in metal of an early form of bone harpoon. They were made by hammering and cutting the metal into shape. Each is provided with a hole, cut near the sharpened and rounded base, for the purpose of securing the point by a string to the shaft, in the same manner that points of bone of a similar pattern are fastened. The smallest of the three, fig. 33, is five and a half inches long and has four long barbs, all on one side, as is the case with the others. The second specimen is six and three-quarters inches long and has five barbs. The third is seven and a

quarter inches in length and has six barbs. The early explorers

of the Northwestern Coast mention that copper was used by the natives for various purposes, and it is likely that such barbed points as these have long been made by the fisherman of the coast from copper obtained by barter with the interior tribes.

MASSES OF COPPER.

Several explorers have mentioned the discovery of masses of native copper in the mounds of the western states, and it is very probable that masses of the metal were collected, or obtained by barter, and retained as valued possessions for the purpose of working into desired objects. There are two small masses in the Museum under the following catalogue number.

No. 9865. From "an Indian grave" near Burkesville, Kentucky, collected by Mr. C. L. S. MATHEWS. These two small irregular masses of copper are about half an inch in length, and while they have the appearance of small nuggets of the native ore, their bright glossy surfaces give to them the appearance of having been slightly melted or fused in contact with some other substance. There is no record of the condition of the skeleton in the grave in which they were found, or of other objects in the grave.

COPPER IMPLEMENTS FROM MEXICO.

When Dr. Valentini was writing his very instructive and valuable paper on Mexican Copper Tools, published in the Proceedings of the American Antiquarian Society in 1879, he regretted that he had not been able to see a single specimen of a copper or bronze implement from Mexico, and all the writers of recent times, when alluding to Mexican copper tools, have to turn to the meagre notices of the three specimens figured by Du Paix in 1806, for their principal information, although mention has been made of the discovery of several deposits, or hoards, of copper implements in the country. It is, therefore, particularly important that the eight specimens in the collection of the Museum, and five others for the use of which I am indebted to Mr. STEPHEN SALISBURY, jr., should be described in detail. One of the axes has been subjected to a careful analysis by Prof. S. S. SHARPLES who reports that it is

made of pure copper, and one of the hoes was tested at the Chemical Laboratory with the same result. As the other specimens agree with these in color and hardness, there is every reason to believe that they also are of unalloyed copper. The fact that the specimens analyzed consist of pure copper is also of importance in indicating that it was either made from native copper or from metal obtained from a nearly pure ore which could be reduced by the primitive methods within the means of the people. Beyond the fact that copper is found scattered through Mexico to a considerable extent, consisting of vitreous and red oxide ores, with native copper in a limited quantity, I can find but little information that is of importance in relation to the probable methods by which the Mexicans obtained the metal. As there can be no doubt, however, in relation to the knowledge that they had of tin, which they must have obtained by smelting the ore, it is not reasonable to deny to them the knowledge of smelting copper.

Dr. Valentini, who has entered at considerable length upon a discussion of the evidence in support of the statements about the metals mentioned by Cortez and Bernal Diaz, quotes the following words from a letter by Cortez: "I have seen for sale trinkets made of gold and silver, of lead, bronze, copper and tin," and as he has brought out so much of interest from the meaning of the ancient Mexican picture-writings, and from the authors of the period of the Conquest, I cannot do better than refer to his paper for further information on this subject. He has, however, made the suggestion that the *laton*, which was said to be a copper alloy, consisting either of a mixture of tin (true bronze), or of gold or silver, was a natural mixture of the ores, and was known to the natives simply as soft or hard copper of different colors; but this will hardly stand a scientific scrutiny, and in connection with the suggestion it is well to recall the analysis of a Mexican chisel given in the *Anales del Museo de Mexico*, Vol. I, p. 117, as quoted by Evans, *Ancient Bronze Implements of Great Britain*, p. 166, which is stated to contain "97.87 copper and 2.13 of tin."⁷ In future notes upon the metallic objects in the Museum, I shall have occasion to mention numerous articles from South America which are of cast bronze, and also of alloys of copper and gold, but so far as our specimens from Mexico go, they simply prove that the

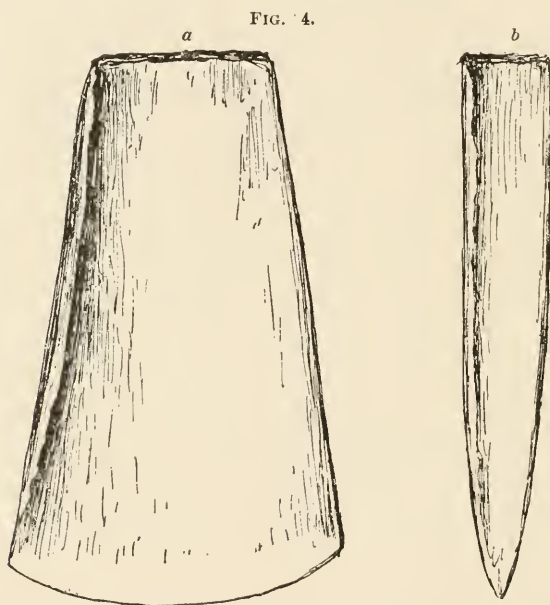
⁷ Dana gives the composition of sulphuret of tin as: sulphur 30, tin 27, copper 30, iron 13, and states that this ore has only been found in Cornwall.

copper implements we have were wrought into their present shape by the hammer from pure copper. This may have been obtained in a native state, but there can be little doubt that it was melted and cast into bars and sheets from which the implements were formed by hammering, although these exhibit greater skill in the work and nicety of finish than those recorded on previous pages from the United States.

Notwithstanding the abundance in Mexico of axes and other objects made of copper at the time of the conquest, and the subsequent finding of several large hoards, there is no doubt about their present rarity in collections, both in and out of Mexico, and it is evident that in common with the gold and silver ornaments very few have been saved from the melting pot. Mr. AD. F. BANDELIER called my attention to the rarity of copper implements in Mexican collections, and Dr. R. H. LAMBORN has written me to the same effect from Mexico, in answer to my request that he would look for them particularly during his visit. In his letter he states that he has seen but three copper implements of unquestionable antiquity, although he made many inquiries. Two of these were needles, originally about as thick as ordinary knitting needles and about four inches in length. They were much decomposed, but one still showed a large and well-formed eye, like that in a common darning needle. These were said to have been found in a tomb near the pyramids. The other implement was a small well-made chisel or axe, five inches long and one and three-quarters wide across the cutting edge. This was in the extensive collection of the late Sr. Baches, and was the only copper object contained in the collection.

No. 18117. In 1878, Dr. EDWARD PALMER, while engaged in explorations for the Museum, opened a small tumulus three miles from Venis Meicis in the state of San Luis Potosi. He there found several of the terra-cotta images, ornaments and spindle-whorls, so common throughout the country. With these were three vessels of pottery, a stone ornament, a number of obsidian flakes, a crystal of quartz, two grinding stones, a stone mortar, and the small copper axe recorded under this number. This small mound was evidently the site of an ancient dwelling, and there can be no doubt of the considerable antiquity of the objects found. The axe is wedge-shaped, with a flat head which is three-eighths of an inch in thickness and seven-eighths in width, gradually becom-

ing wider and thinner to its cutting edge, where it is an inch and three-quarters wide. It is, judging from its red color and softness, of pure copper. Over its whole surface are unmistakable signs that it was wrought by hammering, either from a mass of native copper or from a short bar of the cast metal. In compactness and homogeneity it is like the other copper axes we have from Mexico, and decidedly different from those I have described from the United States. It is this fact that suggests that the implement was wrought from a block of the metal about two inches long

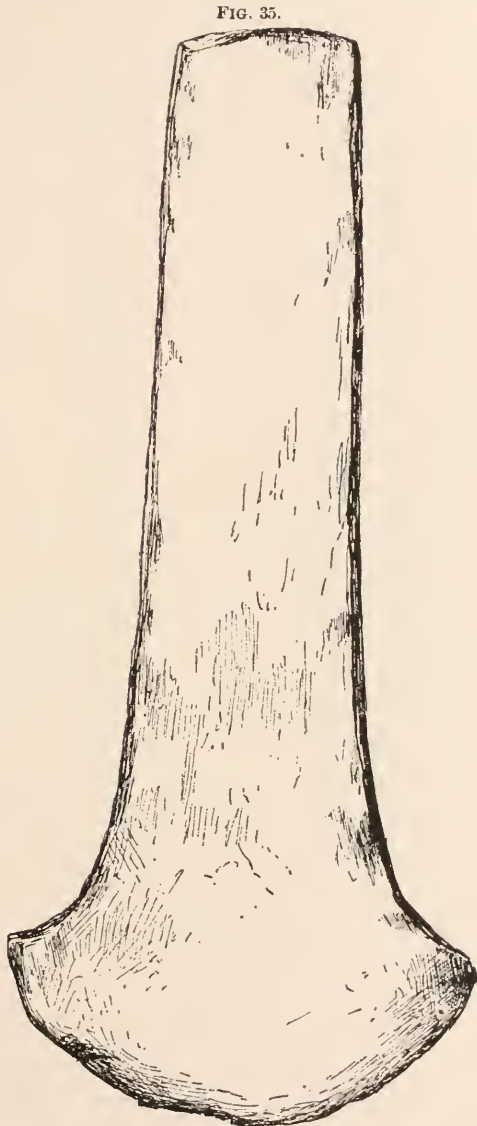


No. 18117. Copper Axe; *a*, the broad surface, *b* edge, showing thickness.
From a Tumulu in San Luis Potosi.

which had been formed by casting. A small cavity and slight fracture on the head of the axe also have the appearance of a flaw in casting the metal. There is, however, no doubt that its present shape was produced by hammering, and in doing this the edges were expanded and have only been partially hammered down as can be distinctly seen by the hammer marks on the still existing ridges. The cutting edge is slightly rounded as shown in fig. 34, *a*, and was formed by working on both sides as shown in fig. 34, *b*. About a third of the edge, on the left as represented

in the figure, is much battered by use, and taken altogether, this little wedge-shaped axe looks as if it had done considerable service for its former owner. The only figures I can recall of a Mexican axe of this shape are the one on the left of the three axes from Yucatan, reproduced from the Dresden Codex, in cnt 8 of Dr. Valentini's article, which is represented as set in a slightly curved handle; and fig. 58 of Mr. Squier's paper on American Copper Implements, in the Smithsonian Contributions, Vol. II, copied from a Mexican painting.

Nos. 26023 and 26206. In August, 1881, a number of copper axes, all of nearly the same size and of one pattern, were found near Tlacolula, Oaxaca, but the circumstances relating to the discovery I have been unable to learn. Soon after they were found, Mr. FREDERICK OBER was



No. 26023. Copper Axe. From Oaxaca.

travelling through the country, and six of them were given to

him by the owner, who prized them simply on account of their being pure copper, as he had discovered by slightly filing one side and cutting a small piece off the blade of each. Some of them had been cleaned of the green carbonate of copper with which they were covered, by scraping and filing, but others were fortunately left untouched, except, as above stated, on the edge of the blade. Four of the six specimens brought home by Mr. Ober were obtained for the Museum. A short time afterwards Mr. ALEXANDER AGASSIZ was travelling in Mexico and met with two axes of the same lot, which are filed and cut in the same way as the Ober specimens, but are otherwise uninjured and are still covered with the coating of green carbonate and have a slight patina. These specimens Mr. Agassiz presented to the Museum with a number of other interesting objects which he obtained during his travels from Yucatan to the city of Mexico. Mr. STEPHEN SALISBURY, jr., has also received three axes from the same lot, from Mr. L. H. Aymé, and has kindly let me have them for comparison with the others. I have, therefore, the opportunity of studying nine specimens of this important lot of axes which are of the form most usually represented in the ancient Mexican picture writings, where they are shown as set in wooden handles which are usually curved. This method of mounting the implement in an eye near the end of the handle shows them to be axes beyond question. They are also represented without handles in the pictures illustrating the tribute of different towns to the controlling power. Both of these forms of representing axes can be seen in cuts 1 to 6 of Dr. Valentini's article to which I have several times referred. They also resemble the axe from Quilapan, figured by Du Paix, but are not quite as broad, and are a little longer.

As already stated, these nine axes are all of the same general pattern and nearly of the same size. The largest of the lot is represented of full size in fig. 35, and the smallest in fig. 36 of which fig. *b* is a section. No two are of exactly the same dimensions, but when placed in a series the variations from one to the other are very slight. The largest is slightly less than five and three-quarters inches long and a little over two and a half inches wide, measured from point to point across the rounded blade. The smallest is slightly more than five inches in length and is two and a quarter inches in width across the blade. The gradations between these two extremes are best illustrated by the series of outlines

given in fig. 37. In width at the flat but-end, or head, there is still less variation, that being three-quarters of an inch in some, and

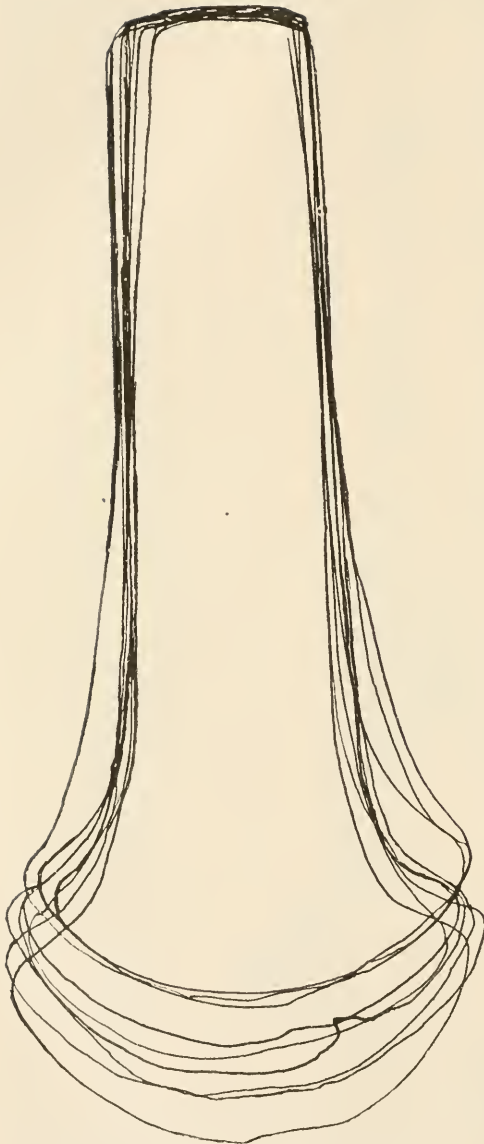
FIG. 36.



No. 26023. Copper axe; *a* broad surface, *b* section. From Oaxaca.

not quite seven-eighths of an inch in others. In thickness in the central part they vary from one-quarter to three-eighths of an inch.

FIG. 37.



Outlines of nine copper axes from Oaxaca, to show the individual variations produced by hammering.

The principal variation in thickness is at the extreme end or head of the axe, which in one of the two presented by Mr. Agassiz and also in one of Mr. Salisbury's specimens is a full quarter of an inch in thickness, while all the others are about two-thirds as thick. In all, this end is considerably thinner than the central portion as will be seen by looking at the section given in fig. 36, *b*. In all but the Agassiz specimen with the thickest end, which has the lateral edges slightly rounded off, the edges and the broad surfaces are flat and smooth. From these remarks it will be seen that while the variations between the nine specimens are so slight that they can all be said to be of one pattern and of about the same size, they are yet sufficient to show that they were not all made in one and the same mould. To exemplify this I have introduced fig.

37 which shows the outlines of the nine specimens placed one over the other. They might, however, have been rough cast in two or three moulds of nearly the same size, and then finished with the hammer, as were the ancient bronze implements of Europe; but it seems more likely that if any casting was done it was simply in the form of bars about five inches long, three-quarters of an inch wide and a quarter of an inch thick, and that from such bars the axes were wrought entirely by the aid of the hammer. That they were hammered there is not the slightest doubt, as the foldings of the copper where it expanded along the edges can be traced here and there on all the specimens, although such expansions have been carefully hammered down. In one of Mr. Salisbury's specimens which has a much thinner blade than any of the others, there are fractures at the two points of the blade which were unquestionably caused by the great expansion of the metal while making the thin blade with a hammer. Another of Mr. Salisbury's specimens has the butt-end considerably battered as if from long use. Analysis has proved that one specimen was of pure copper, and as the color and hardness of the others are the same as the one analyzed, there can be little doubt that they were all of pure metal, and we must either believe that they were made from rough cast bars or from compact masses of native copper. The smooth compact surface of these specimens is entirely unlike the laminated and granulated surface of the copper axes from the United States already described.

It is stated that Cortez employed the Mexicans to cast for him eight thousand arrowheads of copper, and it is also known that he obtained from them copper and tin, which led him to the discovery of the source of the tin in the province of Tacheo, from which place he secured sufficient tin to mix with the copper he had received from the natives to cast several small bronze cannon. With these facts before us it seems probable that the Mexicans aided their manufacture of axes by casting bars as near the desired shape and size as was most convenient. The fact that they used moulds in making ornaments and spindle-whorls of terra-cotta, as shown by such moulds in the Museum, tends to confirm the statement of the early writers that moulds were used for the casting of metals.

No. 26024. Captain Du Paix gives a figure of natural size (Kingsborough, Vol. iv, Pl. i, 25, fig. 75,) of a copper implement four and a quarter inches long, by five and three-quarters in width,

from point to point of rounded blade. Of this he makes the following statement (Kingsb. Vol. vi, p. 446): "In Zochs, a town in the vicinity of Oaxaca, I was shown a copper implement, in the house of an Indian laborer named Pasqual Bartolano, who a short time before my arrival [1806] discovered, when ploughing his field, twenty-three dozen of these tools, contained in two large earthen pots, in very good preservation; they are all of cast metal, and of similar form; they only differ from each other a little in length but appear to be of equal thickness." He then states that the use of these instruments was unknown. Afterwards he was led from a picture which he saw at Mitla to believe they were the blades of hoes.⁸

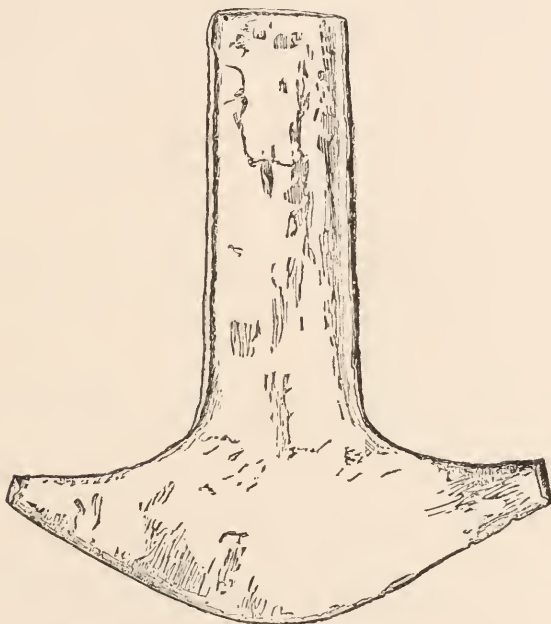
The T-shaped pieces of copper mentioned by several early writers as native coins were very likely such copper blades, and Mr. Bancroft, in his *Native Races of the Pacific States*, Vol. iv, 383, alluding to the specimens described by Du Paix considers them as used for money, and further adds that he has a precisely similar article from one of the Mexican ruins. As regular articles of tribute or as implements in constant demand, these implements would unquestionably have a standard value among a people so far advanced in the arts as the ancient Mexicans; but I fully agree with Dr. Valentini in his conclusion that objects of this character were not manufactured for the purpose of serving as coin.

Mr. OBER, while at Teotitlan del Valle, a town between Oaxaca and Mitla, in 1881, had a similar copper implement given to him, and was told that it was found, with many others like it buried in a large earthen jar. This specimen I obtained for the Museum, and it is represented of one-quarter size (one-half diameter) in fig. 38. It is six and a quarter inches long and five and three-quarters wide, from point to point of the circular blade. It was evidently cut from a sheet of copper about a sixteenth of an inch thick, and the blade has been made thinner by hammering, until a thin but not a sharp cutting edge was produced. That the implement was cut from the copper sheet is shown by the slight irregularities or

⁸ Du Paix also gives a figure of a round chisel flattened at its circular cutting edge, which he obtained near the city of Oaxaca. (Kingsb. Vol. iv, Pl. I, 25, fig. 77, and text Vol. iv, p. 446.) On the same plate he also represents a polished mass of copper pyrites which has had two holes bored into it as if for its attachment to some other object. This is interesting in indicating the kind of ore which may have been smelted and also from its resemblance to a similar ornament of sulphuret of iron in the Museum from Peru. Du Paix also mentions (p. 457) that while at Mitla he obtained several copper implements of various sizes and shapes.

notches made by the cutting tool along the concave or upper margins of the blade, from each point inward. Above this part, for the whole length on both sides and across the top, the copper has been evenly hammered so as to form a considerable ridge bordering the flat surface of each side of the implement. This has resulted in widening the edge to about an eighth of an inch, around what may be called the shank. This part of the implement is one and three-fourths inches wide where it merges into the blade and one and

FIG. 38.

No. 26024. Copper Hoe, $\frac{1}{2}$. From Teotitlan del Valle.

three-eighths at its end. Were it not that the semicircular edge of the blade is too blunt to answer for cutting purposes it would be natural to call the implement a knife, to be held in the hand. The figure given by Du Paix represents the borders of the shank turned over in the same manner as in our specimen, which is not the case in the copies of the figure given by Squier, and particularly so in the one given by Valentini, which represents this part as rounded. As already stated Du Paix finally concluded that implements of this character were hoes, and that is very likely the

purpose for which they were made. They could easily have been fastened to the end of a pole, and in soft ground would serve very well as hoes. The circular edge in our specimen, if examined with a lens, shows many little abrasions and a high polish, as if from long use. It also has several notches, and the two points of the blade are folded over as if caused by rough usage, all of which lead to the conclusion that Du Paix has correctly designated the implement as one for agricultural purposes.

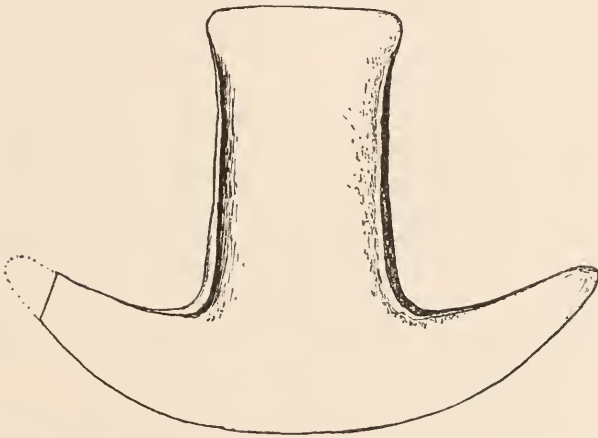
Another indication that the implement was fastened to a handle is a slight indentation of the central portion of the shank, as if there had been a strain at that point which has caused the copper to bend a little. This blade is made of pure copper, so far as can be judged from its color and hardness, and it has the appearance of copper which had been cast in a thin sheet and then hammered. At one point there is a place where a portion of the metal has been hammered down, which has the appearance of a flaw in the casting, although if the implement were made from a mass of native copper a similar appearance would result from the compression of a ragged edge of the metal. When found this interesting copper implement was coated by a green carbonate which has been partly removed.

In Mr. SALISBURY'S collection there are two implements of this character which were lately sent him from Oaxaca by Mr. L. H. Aymé, and probably came from the same lot as the specimen in the Museum obtained by Mr. Ober. One of these varies but slightly from the one represented in fig. 38. It has a little shorter and broader shank and the curve of the blade is not quite as long. One of the tips of the blade was broken off, probably while in use, and the other was folded over and so nearly detached that it fell off during my examination and was taken to the Chemical Laboratory for analysis, which proved it to be pure copper. This specimen is five and three-quarters inches long and the same in width across the blade, allowing for the broken points, and is one and a half inches wide at the end of the shank. Its surface is pretty well covered by a green carbonate of copper in more or less extended blotches. Like the Museum specimen both of Mr. Salisbury's exhibit the slight indentures on their shanks as if they had once been held fast in handles, and they also have evident signs of wear along their edges.

The other specimen belonging to Mr. Salisbury is of particular

interest as it still more closely resembles the one figured by Du Paix. It is only four and one-half inches long, and the blade, which is not nearly as deep as in the others, is six inches in width, allowing for the broken point on one side. The end of the shank is not hammered so as to form a ridge on both sides, as in the others, and is two inches in width; the hammered sides have an edge three-sixteenths of an inch in width in the centre formed by hammering the thin edge of the copper so that it projects on both sides. This widened edge extends slightly along the curve of the blade where it joins the shank, but does not continue quite to the end of the shank. The variation in these details from the Museum

FIG. 39.



Copper Hoe from Oaxaca, $\frac{1}{2}$. From a specimen in the collection of Mr. Salisbury, introduced for comparison with fig. 38, and with the figure by Du Paix.

specimen can best be understood by comparing figures of the two, and for this purpose fig. 39, representing the implement of one-half diameter, is introduced, although the specimen does not belong to the Museum. Nearly the whole surface of this specimen has been changed to a red oxide of copper, over which, particularly on the blade, is a coating of green carbonate which in several places has a decided patina. By viewing this figure so as to look at it with the curved blade uppermost, its resemblance to the letter T is very marked, and in that position the implement will then answer for "the thin copper coins shaped like the Greek Tau," as stated by the old writers.

COPPER ORNAMENTS AND IMPLEMENTS FROM PERU.

The reports by Pizarro and his followers about the immense wealth of the rulers of Peru at the time of the Spanish conquest, although they were probably exaggerated, have been in a measure substantiated by the large number of articles made of gold, silver, copper and bronze, which have since been discovered among the ancient ruins and burial places, by explorers and treasure-seekers, and nearly every museum of antiquities contains numerous examples of the metallic work of the ancient Peruvians. Unfortunately, comparatively little of the ancient gold and silver work has escaped the melting pot, although a sufficient number of objects have been preserved to show the character of the work and the method of using the metals.

Rivero and Tschudi, who wrote their "Antiquities of Peru" over thirty years ago, state that "we have no accounts of the mode of extracting the copper which is seldom found in the native state in Peru," but Squier, who examined the ruins of Chimú several years later, gives an account of the remains of furnaces in which were still to be seen the slag derived from the smelting of silver and copper ores, and he also informs us that "tin and copper ores of great purity are found in southern Peru and Bolivia, between the ranges of the Cordilleras and the Andes. They occur in the singular form of little nodules in the drift strata."

In the volumes of these authors there are numerous references to metallic objects. Rivero and Tschudi state that in the Lima Museum "there are vases of copper, very thin, some idols, instruments, and two solid staves a yard long, with serpents inlaid, which were recently discovered in the department of Puno." A description is also given of an ornamented copper staff, six inches in length and an inch in diameter, and Squier, when describing the metallic objects found about Chimú, several of which he figures, states that "many implements and weapons of bronze have been found in and around Chimú, and have been collected by the ton in former times." In fact, the evidence of all recent writers, and the many specimens in collections, prove that copper, tin, silver and gold were extensively used in ancient times in many regions from Chili to Mexico, and that in some places within this wide

area the ores were smelted and the metals cast, either pure or with alloys.

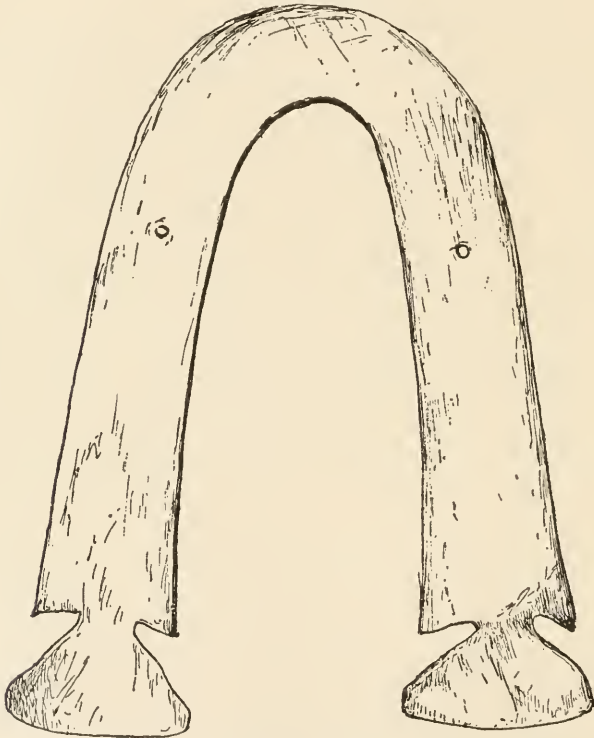
The collections in the Museum from these several regions contain a number of objects made of gold, silver, bronze, and gold and copper alloys, which I hope to describe in a future paper. Several of these are of great interest as they are proofs of the higher development in the art of working metals reached by several ancient American nations. The specimens now described are probably all of pure copper.

Nos. 24030 and 24031. In the Peruvian collection presented to the Museum by Dr. W. STURGIS BIGELOW, there are two circular pieces of thin copper, each about an inch in diameter which were taken from the mouths of mummies. One is still attached to the tongue and is partly embedded in a black pitchy substance, which ignites readily and burns with a quick flame, leaving a black ash. Unfortunately the place where the mummies having the disks came from is not known, but judging from the general character of the associated articles it is probable that they were obtained from some of the ancient burial places not far from the coast of Peru, very likely from Pachacamac, and Squier mentions that he found a small thin piece of copper in the mouth of the body of a fisherman which he took from a tomb at that place. In the wrappings about this body, Squier states that besides a fishing net and lines, he also found fish-hooks and a sinker of copper. Bollaert also mentions copper fish-hooks among the articles found by him in the huacas at Iquique and Molle. Rivero and Tschudi mention that disks of gold, silver or copper are found in the mouths of mummies. Bollaert, referring to this fact, states that Mr. Fariss while at Atequipa, between 15° and 16° S., found disks of gold with the human face represented upon them in the mouths, ears and nostrils of mummies. Stevenson says "any small piece of gold which was buried with the bodies at Huara is generally found in their mouths." Hutchinson also records the finding of copper disks in the mouths of mummies.

No. 8709. During his visit to Peru in 1874 and 5, Mr. ALEXANDER AGASSIZ secured a large and important collection of antiquities which he presented to the Museum. A large part of the collection was made by his assistant, Mr. S. W. GARMAN, in the ancient cemetery at Ancon, where so many interesting things have been obtained. At this place the bodies are found at various depths

below the surface, done up in large bundles. The specimen catalogued under this number was found in the wrappings of one of the bodies. It is a very thin disk, probably an ornament, of pure copper as determined by an analysis kindly made for me by Mr. C. F. MABERY of the Chemical Laboratory. The diameter of this disk is three and a quarter inches. There are two small holes in it, one near the margin, and the other in the centre. The mar-

FIG. 40.



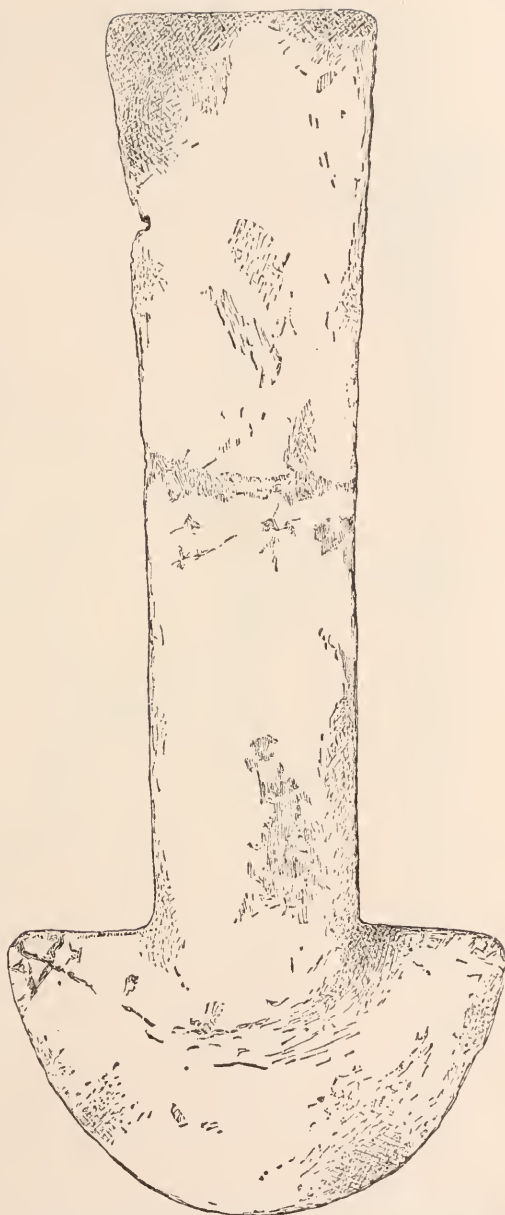
No. 8710. Ornament of Copper. From a Huaca at Ancon, Peru.

ginal hole has smooth edges, but in the central hole the metal forced to one surface, by punching the hole through from the opposite side, is rough and split into several small points as if for the purpose of fastening the disk to a piece of cloth or some other material. The surface of both sides of the disk was highly polished, and is now of a yellow, almost brassy color which may be

patina. On breaking a small piece out of the margin for analysis, the fractured edge showed the red-copper color and a granulated structure like cast metal. The surface in places, more particularly on one side, has a coating of green carbonate of copper.

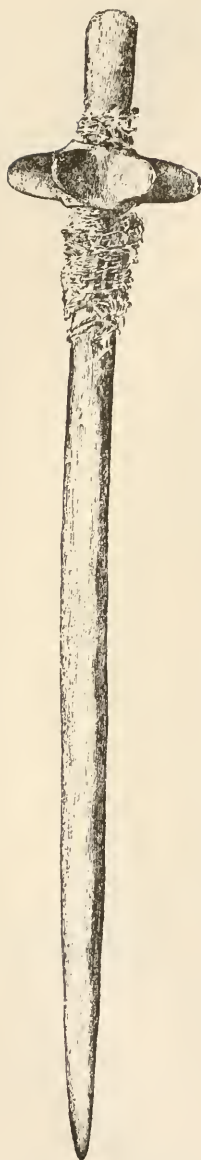
No. 8710. This horseshoe-shaped ornament of thin copper has the same character of surface and internal color similar to the disk described above. It was found by Mr. GARMAN under the same circumstances, and was presented by Mr. AGASSIZ. There can be little doubt that this ornament and also the copper disk were cut from thin sheets of cast copper. As will be seen by reference to fig. 40, which represents the ornament of full size, there are two small

FIG. 41.



No. 7322. "Trowel" made of Copper, $\frac{1}{2}$. From a Huaca at Ancon, Peru.

FIG. 42.



No. 8767. Club with star-shaped head of Copper, $\frac{1}{2}$. From a Huaca at Ancon, Peru.

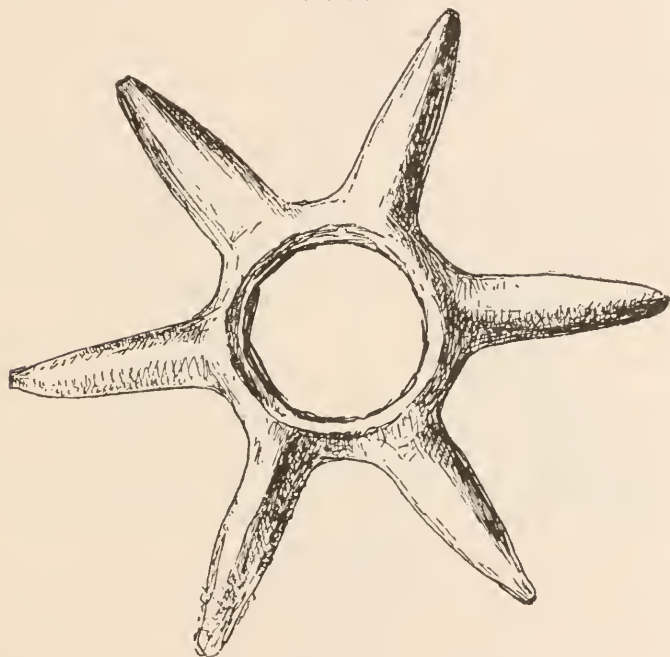
holes punched through the sides, and the ends are notched as if to aid in fastening the ornament to a piece of cloth. In the green carbonate of copper, which has formed on one surface more than on the other, there are a number of fine lines which have the appearance of hairs, and it is probable that the ornament was in contact with the head of the person with whom it was buried.

No. 7322: Fig. 41 represents, of one-half diameter, an implement cut from a sheet of pure copper, as shown by analysis made by Mr. MABERY. It was obtained by Prof. LOUIS AGASSIZ from Ancon, Peru, in 1873, during the Hassler expedition, and given by the Museum of Comparative Zoology with many other things obtained by the expedition in Peru. It is twelve and a half inches long, about seven inches wide across the blade from point to point, and two and three-quarters wide at the opposite end. It is of uniform thickness of about a sixteenth of an inch. The copper is now a red oxide, with nearly all of one surface and portions of the other covered by a green carbonate. In places, particularly at the end of the handle, as shown in the figure, the threads of a piece of woven cloth with which it was in contact, have been preserved by the action of the copper. On page 176 of his volume on Peru,⁹ Squier gives a figure of an implement of this character which he calls a trowel, of which he writes "Vast numbers of a kind of implement, of which an example is here given, are found not only in Chimú, but along the whole Peruvian coast. Although varying in dimensions from a few inches to nearly two feet in length, they are unvarying in shape. They are cut, apparently, from thin

⁹ Peru: Incidents of Travel and Exploration in the Land of the Incas. By E. George Squier, New York, Harper Brothers, 1877.

but stiff sheets of bronze, and the curved lower edge is invariably sharp as is the upper one occasionally." In our specimen the edges have not been sharpened, but the circular edge shows a slight polish as if the blade had been used like a spade or trowel, and it is very likely that such implements were potters' trowels. As already stated, our specimen is made of sheet copper, and not of bronze as Squier implies. There is a general resemblance be-

FIG. 43.



No. 8767. Club-head of Copper. From Ancon, Peru.

tween this implement and the T-shaped implements from Mexico, which, following Du Paix, I have considered as hoes.

No. 8767. A common form of weapon along the Pacific slope of South America consists of a club-head, made either of stone or metal, with several points or rays projecting from the perforated central portion, which was mounted on a handle of wood. Of such a pattern is the one represented by figs. 42 and 43, which was found in a grave at Ancon, Peru, and presented by

MR. AGASSIZ. In fig. 42 the head is represented on its short handle of hard wood pointed at one end, and is tightly fitted by a wrapping of coarse cloth. In this figure the weapon is shown of a little less than one-third its length. In fig. 43 the outline of the star-shaped head is represented of full size. An analysis of small shavings taken from one of the points was made by Mr. MABERY, and although the quantity was too minute for satisfactory results no other metal than copper was traced. This club-head was probably cast in a mould and afterwards smoothed and finished by cutting and rubbing. The six rays are each about an inch in length, and the hole for the handle about the same in diameter. The total width across from point to point of opposite rays is three and a half inches. The length of the head is one and one-eighth inches. The wooden handle is twenty-one and one-half inches in length. The surface of the copper is smooth and dark-colored, with a few patches of green carbonate, which in two or three places, particularly near the points of the rays, has formed over fragments of cloth with which the weapon was in contact while in the grave. The points are slightly battered as if from use.

In a chapter upon perforated stones of many kinds, in which I have brought together all the facts I could obtain about weapons of this character, I have alluded to this particular specimen and also to others of stone and metal from various places, and I refer the reader to the volume¹⁰ for numerous descriptions and figures of implements of similar forms. Squier has also given a figure¹¹ of a similar metallic club-head from Chimu.

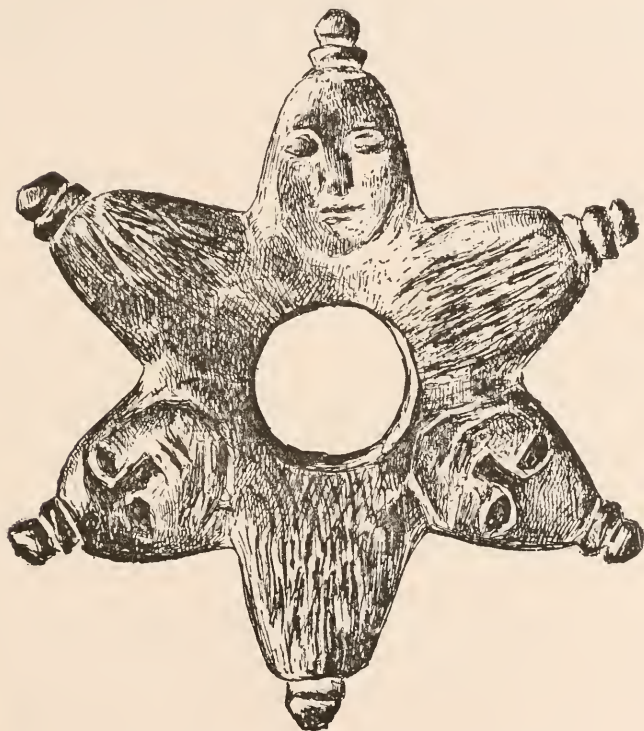
No. 24134. The last of the copper objects to be described in this paper is the interesting club-head from Peru, given by Dr. W. STURGIS BIGELOW. A bit of metal was cut from this specimen and given to Mr. MABERY for analysis, and he reported that so far as he could ascertain from the small quantity given him it was pure copper. This club-head, like that from Ancon, has six rays, but they are broad and flat and terminate in rounded points. As will be seen by reference to fig. 44, each ray represents a human head, the face on one surface and the hair and back of the head on the other; so that the three alternate rays as seen in fig. 44,

¹⁰ Report upon United States Geographical Surveys west of the one hundredth meridian, in charge of First Lieut. Geo. M. Wheeler, Corps of Engineers, U. S. Army, Vol. VII, *Archæology*, 1879. Chapter on Perforated Stones, pp. 135-189, figs. 44-60, and plate X.

¹¹ Peru, p. 177.

each shows a face, and each of the other three the back of a head. In the collection of the late Mr. William S. Vaux of Philadelphia, there is a similar Peruvian club-head, in which the human head is represented in the same way as on the one here figured. There can be no doubt about our specimen having been cast in a mould, as the line of union of the two parts of the mould can be traced along

FIG. 44.



No. 24134. Club-head of Copper. From a Huaca, Peru.

the sides of the rays, although it has been cut and smoothed. There are also slight imperfections in the casting where the metal did not flow smoothly, and there are here and there indications that the copper was cut in order to correct similar imperfections in the cast. The mould was probably filled with the melted metal at the end of each point and the burr afterwards rounded off. The grooves around the points were evidently cut, and as will be seen

in the figure, they are not exactly the same on each point. This club-head is about three and three-quarters inches wide from point to point, and half an inch thick. The hole for the handle is not quite an inch in diameter. The surface has probably been cleaned since it was found, but all the cavities still retain a coating of green carbonate of copper. This specimen is a good illustration of the knowledge which the ancient Peruvians had of the methods of working metals and of the difficult art of casting copper.

SIXTEENTH AND SEVENTEENTH ANNUAL REPORTS

OF THE TRUSTEES

OF THE

PEABODY MUSEUM

OF

AMERICAN ARCHÆOLOGY AND ETHNOLOGY.

PRESENTED TO THE PRESIDENT AND FELLOWS OF
HARVARD COLLEGE.

VOL. III. Nos. 3 AND 4.

CAMBRIDGE:

PRINTED BY ORDER OF THE TRUSTEES.

1884.

PRINTED AT THE SALEM PRESS,
SALEM, MASS.

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PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY
IN CONNECTION WITH
HARVARD UNIVERSITY.

FOUNDED BY GEORGE PEABODY, OCTOBER 8, 1866.

TRUSTEES.

- ROBERT C. WINTHROP, Boston, 1866. *Chairman.*
CHARLES FRANCIS ADAMS, Quincy, 1866; *resigned*, 1881.
FRANCIS PEABODY, Salem, 1866; *deceased*, 1867.
STEPHEN SALISBURY, Worcester, 1866. *Treasurer*, 1866-1881.
ASA GRAY, Cambridge, 1866. *Pro tempore Curator of the Museum*, 1874.
JEFFRIES WYMAN, Cambridge, 1866; *deceased*, 1874. *Curator of the Museum*, 1866-1874.
GEORGE PEABODY RUSSELL, Salem, 1866; *resigned*, 1876. *Secretary*, 1866-1873.
HENRY WHEATLAND, Salem, 1867. Successor to Francis Peabody, as President of the Essex Institute. *Secretary*, 1873.
THOMAS T. BOUVÉ, Boston, 1874-1880. Successor to Jeffries Wyman, as President of the Boston Society of Natural History.
THEODORE LYMAN, Brookline, 1876. Successor to George Peabody Russell, by election. *Treasurer*, 1881-1882.
SAMUEL H. SCUDDER, Cambridge, 1880. Successor to Thomas T. Bouvé, as President of the Boston Society of Natural History.
JOHN C. PHILLIPS, Boston, 1881. Successor to Charles Francis Adams, by election. *Treasurer*, 1882.

OFFICERS OF THE MUSEUM.

- FREDERICK WARD PUTNAM, *Curator*, 1875.
LUCIEN CARR, *Assistant Curator*, 1877.
MISS JENNIE SMITH, *Assistant*, 1878.
MISS C. A. STUDLEY, *Assistant*, 1882.
EDWARD E. CHICK, *Assistant in charge of the Building*, 1878.

SIXTEENTH AND SEVENTEENTH REPORTS.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

THE Trustees of the Peabody Museum of American Archaeology and Ethnology herewith respectfully communicate to the President and Fellows of Harvard College, as their Sixteenth and Seventeenth Annual Reports, the Reports of their Curator and Treasurer presented at the Annual Meetings, February 17, 1883, and February 18, 1884.

ROBERT C. WINTHROP,
STEPHEN SALISBURY,
ASA GRAY,
HENRY WHEATLAND,
THEODORE LYMAN,
SAMUEL H. SCUDDER,
JOHN C. PHILLIPS.

CAMBRIDGE,
March 31, 1884.

ABSTRACT FROM THE RECORDS.

SATURDAY, FEBRUARY 17, 1883. The Annual Meeting of the Board of Trustees was held this day at noon, in the Rooms of the Massachusetts Historical Society, Boston. Present: Messrs. WINTHROP, SALISBURY, GRAY, WHEATLAND, LYMAN, SCUDDER, PHILLIPS, and the CURATOR.

The TREASURER stated that in accordance with the vote at the last meeting the funds had been reinvested, as shown in his report which was read and accepted, and ordered to be printed as a part of the Sixteenth Report of the Trustees.

The CURATOR's cash account, audited by Col. LYMAN, was accepted and ordered to be printed.

The CURATOR having sent copies of his Annual Report, in proof, to each member of the Board, the report was accepted and ordered to be printed.

The CURATOR then gave a *résumé* of the explorations in the Little Miami Valley, illustrating his remarks by plans, diagrams and specimens. As an acknowledgment of the importance of these explorations, the CURATOR was requested to prepare a full account of them, with the necessary illustrations, for publication by the Museum.

The TREASURER stated that he had received subscriptions for archæological research to the amount of \$900, in addition to the sum announced at the last meeting, and he was authorized to pay the amount to the CURATOR for the continuation of the explorations.

The CURATOR called attention to the subscriptions amounting to \$775, which he had received in aid of Miss Fletcher's researches among the Indians and for general purposes, as stated in his cash account.

The TREASURER was authorized to pay to the CURATOR the accruing income for the year to be expended for the several purposes as heretofore.

Col. LYMAN was appointed auditor of the accounts of the Treasurer and Curator.

Voted, That the Board make a visit to the Museum and hold a business meeting there at such time as the PRESIDENT shall appoint.

The Board then adjourned.

HENRY WHEATLAND,
Secretary.

REPORT OF THE TREASURER.

*To the Trustees of the Peabody Museum of American Archaeology and
Ethnology in connection with Harvard University:*

The TREASURER respectfully presents the following Annual Report:—

He has sold the Fifteen Massachusetts Coast Defence specie notes each for \$10,000, dated July 1, 1863, due July 1, 1883, the gift of GEORGE PEABODY, for \$150,537 50. And he has purchased,

1882	<i>On Account of Building Fund.</i>	
Nov.	\$62,000 Chicago, Burlington and Quincy R. R., Denver Extension 4 per cent. Bonds at \$80	\$49,600 00
	Brokerage	77 50
Dec.	\$9,000 Pueblo and Arkansas R. R. 7 per cent. Bonds	10,322 50
		<u>\$60,000 00</u>

On Account of Museum Fund.

Dec.	\$54,000 Kansas and Missouri 5 per cent. Bonds at 92½	49,550 00
"	\$36,000 Pueblo and Arkansas Valley R. R. 7 per cent. Bonds	40,723 75
1883		
Feb. 17,	Cash uninvested	263 75
		<u>\$90,937 50</u>
		<u>\$150,937 50</u>

Income Account.

1882			
July.	Received 6 months interest on \$150,000 Mass. 5 per cent.		
	Bonds	\$3,750 00	
Nov.	" 4 months, 24 days interest on \$50,000 Mass. 5 per cent. Bonds	1,000 00	
Dec.	" 5 months, 12 days interest on \$100,000 Mass. 5 per cent. Bonds	2,250 00	
1883			
Jan.	" Pueblo and Arkansas Valley R. R., 45 coupons, \$35 each	1,575.00	
Feb.	" Chicago, Burlington and Quincy R. R. 4 per cent. Bonds, 62 coupons, \$20 each	1,240 00	
"	" Kansas and Missouri R. R., 54 coupons, \$25 each	1,350 00	
			\$11,165 00

1882										\$11,163 00
July.	Paid	F. W. Putnam,	Curator,	on account of	Building Fund	.	\$1,500	00		
Nov.	"	"	"	"	"	"	Museum Fund	.	2,250 00	
Nov.	"	compons	on	62,000 C. B. & Q. bonds,	3 mos. 24 days,	4 p. c.			785 33	
Dec.	"	"	"	54,000 K. & M.	"	4	"	13	"	
	"	"	"	"	"	5	"	13	"	
	"	"	"	31,000 P. & A. V.	"	5	"	13	"	
	"	"	"	"	"	5	"	17	"	
	"	"	"	14,000 P. & A. V.	"	5	"	17	"	
	"	"	"	"	"	5	"	17	"	
1883										454 60
Jan.	"	F. W. Putnam,	Curator,	on account of	Building Fund	.	1,555	00		
Feb.	"	"	"	"	"	"	Museum Fund	.	2,640 04	
										\$11,165 00

JOHN C. PHILLIPS, *Treasurer.*

FEB. 17, 1883.

I have examined these accounts of the Treasurer and the securities on hand, and find them correct.

THEODORE LYMAN, *Auditor.*

Feb. 17, 1883.

CASH ACCOUNT OF

F. W. PUTNAM, *Curator, in Account with Peabody***Dr.**

1882-83.

To Building Fund.

Balance on hand from last account	\$1310 62	
Received from John C. Phillips, Treasurer	3055 00	
	<hr/>	\$4365 62

To Museum Fund.

Balance on hand from last account	233 02	
From Building Fund, 3rd payment account of cases 1868-74 . . .	1000 00	
Balance cash returned from an unexpended appropriation of 1879	16 20	
Received from John C. Phillips, Treasurer	4890 04	
Publications sold	12 11	
Gift from a friend	200 00	
Gift from a friend	25 00	
	<hr/>	6376 37

To Subscription for Archaeological Research in America.

Received from John C. Phillips, Treasurer, the following subscriptions :

Hon. Stephen Salisbury of Worcester	500 00	
Hon. Theodore Lyman of Brookline	500 00	
John C. Phillips, Esq., of Boston	500 00	
Mrs. Augustus Hemenway of Boston	500 00	
Mrs. Gardner Brewer of Boston	300 00	
Dr. C. A. Ware of Boston	200 00	
William B. Weedon of Providence	50 00	
	<hr/>	2550 00

To Subscriptions for Research among Indian Tribes.

Col. A. C. Woodworth of Chicopee (in aid of Miss Fletcher's researches)	500 00	
Joshua W. Davis, Esq., of Boston (in aid of Miss Fletcher's researches)	50 00	
	<hr/>	550 00

\$13,841 99

THE CURATOR.

Cr.

Museum of American Archaeology and Ethnology.

1882-83.

By Building Fund.

Paid Museum Fund, 3rd payment account of cases 1868-74 . . .	\$1000 00	
Cases, stock and labor	770 33	
Furniture, stock and materials used	95 22	
E. E. Chick, part salary	500 00	
	<hr/>	\$2365 55
Balance, cash on hand to new account		2000 07
		<hr/>
		4365 62

By Museum Fund.

Collections purchased and special explorations	71 00	
Six Museum Catalogue Books	33 00	
Stereotyping and printing 1000 copies 15th Report	321 34	
Drawing and engraving	113 54	
Various publications	80 12	
Library; books, subscriptions, cards and labels	48 33	
Photographing and materials	79 49	
Diagrams, cloth, etc.	212 36	
Goniometer 3.00; Atomizer .75	3 75	
Circulars, cards, stationery, twine, etc.	89 32	
Incidentals	30 44	
Postage, telegraph, telephone, express	232 93	
Paper trays	21 63	
Ethnological research among the Indians	25 00	
Water tax	25 00	
Fuel and gas	212 71	
Salaries	4300 00	
	<hr/>	5899 96
Balance, cash on hand to new account		476 41
		<hr/>
		6376 37

By Subscription for Archaeological Research in America.

Explorations in Central America	106 50	
Explorations in New Jersey	102 20	
Explorations in Ohio and Tennessee	1569 48	
Explorations of Shellheaps in Maine	91 15	
Collection from Shellheaps in Alabama	25 00	
Collection from New England	15 00	
Collection from New Mexico	45 00	
Collection from Nebraska	56 50	
Collection from Ohio and Indiana	105 25	
Collection from Salt Cave, Kentucky	5 00	
	<hr/>	2121 08
Balance, cash on hand to new account		428 92
		<hr/>
		2550 00

By Subscription for Research among Indian Tribes.

Amount to new account	550 00	
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\$13,841 99

I have examined this account, with the vouchers, and find it correct.

THEODORE LYMAN.

Feb. 12, 1883.

SUBSCRIPTIONS

FOR ARCHÆOLOGICAL AND ETHNOLOGICAL RESEARCH IN AMERICA,
AND FOR THE GENERAL PURPOSES OF THE MUSEUM.

HON. STEPHEN SALISBURY, Worcester, Mass.	\$500 00
HON. THEODORE LYMAN, Brookline, Mass.	500 00
JOHN C. PHILLIPS, Esq., Boston, Mass.	500 00
MRS. AUGUSTUS HEMENWAY, Boston, Mass.	500 00
SAMUEL D. WARREN, Esq., " "	500 00
MRS. GARDNER BREWER, " "	300 00
DR. C. A. WARE, " "	200 00
DR. R. M. HODGES, " "	100 00
MRS. G. H. SHAW, " "	100 00
HON. ROBERT C. WINTHROP, " "	100 00
WM. B. WEEDEN, Esq., Providence, R. I.	50 00

Amount of above previously announced,	\$3350 00
Col. A. C. WOODWORTH, Chicopee, Mass.	\$500 00
MRS. SUSAN C. WARREN, Boston, "	250 00
DR. ROBERT H. LAMBORN, New York, N. Y.	200 00
GEORGE PEABODY RUSSELL, Esq., Isle of Wight,	100 00
MRS. CLARA B. KIMBALL, Boston, Mass.	100 00
WM. B. WEEDEN, Esq., Providence, R. I., 2d subscription,	50 00
JOSHUA W. DAVIS, Esq., Boston, Mass.,	50 00
A FRIEND, Buffalo, N. Y.	33 00
DR. WM. F. WHITNEY, Boston, Mass.	25 00
MRS. GEO. O. SHATTUCK, " "	5 00

\$1313 00

Total of subscriptions for 1882-3	\$4663 00
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Additional subscriptions are earnestly solicited.

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of Archæology and Ethnology.

GENTLEMEN:—By the liberality of the several ladies and gentlemen who generously subscribed the sum of \$3,350 to be used by the Museum for archæological research in America, we have been enabled to resume the important work of exploration during the past year; and it is with great pleasure that I report to you the valuable results secured through this timely aid.

Of the amount subscribed up to the date of the adjourned annual meeting in March last, \$2,550 was appropriated for use during the year. Arrangements were at once made to continue the explorations in Central America, and I have received word from Dr. FLINT that the work is in progress with prospect of good results. We have been able to continue the work in New Jersey through Dr. ABBOTT's assistance, and several small collections which were much needed to fill gaps in the Museum were secured from other places. I was also able to take the field in person, and under my immediate direction explorations have been made of shellheaps on the coast of Maine, of a large mound and an ancient cemetery in Brentwood, Tenn., and, in connection with Dr. C. L. METZ, of mounds and earthworks in the Little Miami Valley, Ohio.

As the results of my own work were so signally due to the contributors to the exploration fund, it was with pleasure that in the months of November and December I gave a course of five lectures complimentary to the subscribers to that fund. Tickets for the course were sent to the subscribers and others, and were also given out on application at the Museum. All the tickets were taken, and I had the pleasure of making known, to a highly appreciative audience, the results of the explorations, illustrated by diagrams and by the specimens collected. As these lectures were reported for papers in Cambridge, Boston and New York,

this work of the Museum has become widely known, and I trust it will aid in obtaining the means for continuing explorations during the present year.

It would be a great loss if we should again be forced by lack of means to discontinue field work; and since the work of the past year has demonstrated that interesting material may be secured and important results attained by systematic research, we are certainly justified in asking for further aid, which it can hardly be doubted will be given when the importance of the work and the necessity for immediate action are more widely known to the patrons of American research. With a view to extending the interest in American explorations, I recently had the pleasure of giving a lecture in the parlors of Mrs. S. D. WARREN, in Boston, before the Woman's Educational Association.

A brief account of the explorations made under my immediate charge will not be out of place here, although I have not yet had time to study the large amount of material obtained.

The explorations of shellheaps on the coast of Maine, in the month of September, were mainly confined to a large and undisturbed deposit at Keene's Point on the Muscongus Sound, although the great oysterheaps on the Damariscotta River and several smaller deposits nearer the mouth of the river were visited.

At Keene's Point, owned by Mr. WILLIAM KEENE, to whom we are indebted for permission to make the excavation in his pasture, the sea has encroached upon the shellheap and has washed away a large part of it, probably the oldest portion, leaving on the edge of the bluff a thickness of nearly five feet. The deposit of shells extends inland about eighty feet and gradually thins out until there is a depth of only a few inches. The stretch along the shore is over two hundred feet. This deposit consists principally of the shells of the clam, which is still abundant in the sound. Shells of the quahaug, *Buccinum*, *Natica*, oyster and *Pecten*, were also found. The shells of the quahaug and *Buccinum* were more numerous than those of the oyster, but were comparatively few when compared to the clam-shells. Probably not over half a dozen shells of the *Pecten* were thrown out of our excavations. Many broken animal bones were found; the most common were those of the deer, moose and bear, although many bones of the fox, otter, skunk, beaver, and several other species of mammals were obtained. Several species of large birds were represented, princi-

pally herons and ducks. Bones of the codfish, flounder and devil-fish were numerous. Several scales of the sturgeon, and a few turtle bones were also met with.

The deposit was particularly rich in fragments of cord-marked and incised pottery, which were found at various depths below the surface and even at the bottom of the deposit. The number of stone implements found in this shellheap was unusually large, as heretofore similar deposits on the Atlantic coast have yielded but few. Here, however, were many rude hammerstones, several large rudely-chipped implements and a number of chipped stone-points, of which the larger and ruder probably served as knives, and the smaller and more regularly chipped as arrowpoints. One polished celt was found. As usual, in all the shellheaps of New England, bone points were common here, and several of the notched or simple barbed-points were found. A single harpoon-point of bone, with two barbs and a perforation for attaching the point to a shaft, is the first of its kind from the Atlantic deposits. This point was dug out by Mr. ALBERT I. PHELPS and given to the Museum, in addition to a valuable collection which he made from this and neighboring shellheaps. In the shellheap on Hodgdon's Island, Mr. A. T. GAMAGE found a perforated point with a single barb, which, with other things, he gave to the Museum. In this connection I must also mention our indebtedness to Mr. STEPHEN L. CHAPMAN for several specimens which he collected.

A spearpoint of bone was found by Mr. PHELPS about one foot below the surface, and above it, just under the sod, he found an iron point of nearly the same size and shape, which was probably made out of a piece of hoop iron in imitation of the earlier bone implements. An iron spear and an iron axe of very old form were also found in the shells near the surface of the deposit, which with a small clay pipe of a kind made in England about the middle of the seventeenth century, found also by Mr. PHELPS ten inches deep in the shells, show that this particular deposit was added to by the Indians after contact with the whites, though there can be no doubt that it was commenced long before that time.

While I was in Damariscotta it was my good fortune to meet several gentlemen interested in local archæology, from whom I obtained much information, besides numerous specimens which are acknowledged in the accompanying list of additions to the Museum. Among these were portions of human skeletons which were found

in a shellheap on Fort Island, by Messrs. GAMAGE and PHELPS. One of the crania of this lot had been presented to the Museum by Mr. GAMAGE previous to my visit, and Dr. R. C. CHAPMAN kindly gave me the only other perfect skull which had been obtained. The bones of these skeletons were not in natural order, and Messrs. GAMAGE and PHELPS think the bodies could not have been regularly buried. Dr. CHAPMAN also was the means of our receiving from Mr. CHARLES METCALF a nearly perfect cranium and other parts of a human skeleton found several years ago in the great oysterheap at Newcastle. To Mr. F. S. KNOWLTON and his son Mr. J. E. KNOWLTON, the Museum is indebted for numerous specimens found in the shellheaps and on the surface in the vicinity of Damariscotta. Mr. M. H. GAMAGE and Mr. HENRY T. HUSSEY,¹ also added many interesting specimens from the shellheaps in this region.

Soon after my return from this expedition I received an invitation from the Maine Historical Society to give an address before the members of the Maine Historical and Natural History Societies, on the shellheaps of Maine, which I had recently explored, and I had the pleasure of addressing these Societies in Portland on the twenty-third of December.

My explorations in Tennessee were made in the vicinity of Brentwood, Williamson County, during the months of May and June, and I must here express my indebtedness to Dr. W. H. JARMAN and Mrs. JARMAN for their kind assistance.

At this time an earth-mound on the farm of Mr. JOHN OWEN HUNT was examined. This mound has been in the possession of the Hunt family since 1782, and the present proprietor remembers when it had a flat top and steep regular sides, but constant ploughing has reduced its height about four feet while it increased its diameter. Its present height is ten feet and its diameter about ninety-five feet. In 1875 a large red elm, three and a half feet in diameter, was cut from the top of the mound. Leading from the mound to a large boiling spring, about an eighth of a mile away, there is a deeply worn trail which can still be distinctly traced through the woods where it is, in places, three feet deep and four feet wide. There are six good springs within a quarter of a mile of the mound, and the region about was in past times the site of extensive settlements.

¹ Since deceased.

Exploration showed this mound to be one of those large tumuli, the purpose of which is unknown. At its centre, on the surface of the ground, a small bed of ashes was discovered, in which were a few potsherds, a fragment of an animal bone and a piece of burnt stone. Six feet above this were several pieces of burnt limestone, and at various depths in the course of the excavation were found pieces of charcoal, a few animal bones, small masses of ashes, and occasionally a flint chip. About three feet from the top of the mound was a layer of very hard clay, about eight inches thick, which apparently had covered the mound when it was about six feet in height.

This does not seem to have been a burial mound, nor did its ash bed indicate cremation. In the immediate vicinity of the mound were many stone graves, and this circumstance recalls my exploration, several years ago, of another large mound twenty-three feet high, about twenty miles from Brentwood, about which were also a large number of stone graves, and in which there was not a trace of a burial nor even of a fire. Are tumuli of this character simply monuments marking the sites of ancient cemeteries?

About a mile from Hunt's mound, on the rising ground upon which stands the house of Dr. W. H. JARMAN, are the remains of what was formerly an extensive cemetery, covering several acres, but as most of the ground has long been under cultivation hundreds of graves have been destroyed by former owners of the land without any heed being given to their contents. In the immediate vicinity of Dr. Jarman's house, I opened eighty graves which had not been disturbed. The top stones of many of these were from two to three feet below the surface, which is an unusual depth.

These graves were of the same character as the several thousand which have been explored by Mr. Curtis and myself in the Cumberland valley. They were made of large slabs of stone placed edgewise, to form the sides and ends, on which other flat stones rested, forming the tops of the graves. The bottoms of these cists were sometimes lined with small stones but oftener with large potsherds. In some instances the lining was probably of bark. In several of these graves, two or three, and in one instance five, bodies were buried. In two graves I found, besides the skeleton of the person for whom the grave was made, one or two bones belonging to a second individual in such positions as showed that

they had been carefully placed in the grave. In the grave of an adult whose skeleton was removed nearly entire, there was the skull, but no other bones, of a very old person, which was unquestionably placed in the grave at the time of the burial of the body. In one grave containing five skeletons, two of the three adult crania have persistent frontal sutures, and these are the only crania from the eighty graves presenting this peculiarity. One adult skull has an extra suture dividing the parietal of the left side into two nearly equal portions. This skull is also remarkable for its extreme occipital flattening, and for the great development of large Wormian bones. The two lateral incisors of the upper jaw are absent, and if they were ever present they must have been lost early in life, as all signs of the alveoli or of wide gaps between the teeth are obliterated. Many of the bones found in these graves bear evidence of simple inflammatory disease but none of any specific taint. Several bones showing united fractures were found.

As has been the case in all the other cemeteries of the stone-grave people of Tennessee, considerable well-made pottery of an ornamental character was found in the graves at Brentwood. This pottery resembles in type that from the Missouri graves, but is, taken as a whole, of better finish. There were no large and coarse vessels in the graves, although the large fragments of thick pottery with which the bottoms of many graves were lined show that large vessels were made. The pottery from the stone-graves consists principally of water-bottles of various shapes, small food-dishes, and bowls. Some of these are ornamented by incised lines, and others by designs in colors. Stone implements have never been found in large numbers in the stone-graves, although they have yielded some very fine and interesting chipped and polished specimens. Among the articles of this character from the Brentwood graves, are a large and finely polished celt of chert, several long chipped points with serrated edges, and a few arrowheads, one of which was found embedded in a dorsal vertebra of the skeleton in the grave. Several implements and ornaments made of bone were obtained from the graves, among them two long bone pins with large flat heads, both found close to skulls, suggesting that they were probably used for hair ornaments. Several terra-cotta and shell beads were found, also a single carved disk of shell, resembling those previously found in the stone-graves

of the Cumberland valley. A clay pipe with an ornamental bowl was taken from one of the graves. Very few pipes have been found in the stone-graves, only eight having been obtained in the several thousand graves which have been explored for the Museum. Of these eight, three were of pottery, and the rest of different kinds of stone; one of the latter, elaborately carved, representing a man holding a cooking pot which formed the bowl of the pipe.

An interesting discovery was made in the cemetery, close to the gate of Dr. Jarman's door-yard. The hill at this place had gradually been gullied, and after a late rain Dr. JARMAN had noticed a mass of charcoal to which he called my attention soon after my arrival. On removing with a trowel all the earth about the charcoal, it proved to be the remains of burnt logs. A man was then kept at work for several days following out the lines of charcoal and burnt clay and after a time he succeeded in bringing to light, from under a few inches of clay, the charred floor-beams of a wooden structure of some sort. Within the enclosure formed by the charred logs were discovered a bed of ashes, a number of fragments of pottery, one perfect dish, identical in character with those found in the stone-graves near by, also a few burnt bones, two small discoidal stones and two discoidal pieces of pottery. The logs had been supported by clay which partly covered them and thus prevented their total destruction when the building, of whose floor they formed a part, was destroyed by fire. This structure was traced for about ten feet in length and five in width, and a drawing was made before anything was disturbed. While stone-graves were found on all sides and within ten to twenty feet of the site of this structure, none were discovered under it, and there seems no reasonable doubt that these charred logs were the remains of a wooden structure of the period of the stone-graves.

In May last I renewed my explorations in the Ancient Cemetery at Madisonville, Ohio, which has become noted for its singular ash-pits, as well as for the skeletons buried in or at the bottom of the leaf mould covering the pits. In my investigations here and in other places in Ohio, I have been greatly aided by the coöperation and constant association of Dr. C. L. METZ, who has become identified with researches relating to the antiquities of the Little Miami Valley. I had in two previous years become greatly interested in this place, and wished, if possible, by renewed investigations to obtain some clew to the purpose which the ashpits served; but

after a thorough examination of a large area, dug over under my direction, in which were numerous ashpits, they remain nearly as much a mystery as ever, and none of the theories brought forward to explain them seem to be satisfactory. The labor expended in digging them in the hard clay, to the depth of from one to five and sometimes even six or seven feet, and the peculiar character of their contents, of which ashes form the greater part, render it not improbable that they were made in pursuance of some peculiar superstition or as a part of a religious rite. A thousand of these pits have been opened and a large amount of material obtained, illustrative of the implements, ornaments, pottery and other articles used by the people who made the pits. Charred corn, nuts, bones and other remains of animals used for food have also been found in the pits. The contents of several pits, excepting the ashes, of which samples were saved, have been brought to the Museum and arranged so as to show the singular mixture of objects found in them. Besides these special lots, a very extensive collection of specimens was obtained from the pits in general.

During the exploration a number of human skeletons were dug out of the leaf mould or from just beneath it. With the skeletons were found a number of pottery vessels, most of which have conical bottoms, and four handles; pipes cut from stone, and ornaments of shell and copper.

For the first time in all my explorations finger rings were found. These rings, made of bands of copper, were still on the finger bones. They are described and figured in the last Report as objects unique in American archæology. A number of crania in good preservation, with other human bones, some of them of pathological interest, were found in the leaf mould. Of a large number of humeri about half were found to have the olecranon cavity perforated; in some cases one humerus was perforated and the opposite one was entire. The tibiae show various degrees of flattening. The crania are nearly all brachycephalic, and although those in our collection have not yet been measured, they appear to be smaller and less flattened posteriorly than those from the stone-graves of Tennessee.

For the first time digging implements made of antler, and the singular bone scrapers, were found in the leaf mould although not associated with the skeletons. As these antler and bone implements are common in the ashpits, this adds to the diffi-

culty in solving the problem of the comparative age of the pits and of the objects found above them. It has been suggested that these characteristic objects were thrown out of the pits several years ago by persons who dug holes in the field, in a search for buried gold, and this may be, though none of the pits in the vicinity showed signs of disturbance.

Near the cemetery, a little up the hill, are several earth-circles from forty-three to fifty-eight feet in diameter. Trenches were run through four of them, down to the hard clay below the leaf mould, revealing in the centre of two, on the clay, beds of ashes in which were potsherds, flint flakes and burnt bones, with a perforated clam shell like those which have been taken by hundreds from the ashpits. One of the beds of ashes was surrounded by a number of flat stones, which had been burnt and were evidently the remains of a fire-place. In the trench, on the clay, there were found a rudely chipped stone hoe, a rude stone axe with a groove, a split pebble, a fragment of a stone gorget, worked antler tips and several rude arrowpoints.

The results of the examination of these circles proved them to be the sites of habitations, over which from one to two feet of leaf mould has formed since the central fires were deserted and the circular structures fell from decay. There can hardly be a doubt that these circles point out the site of the village of the people who, living on this beautiful spot, made the singular ashpits near by, and may have buried their dead over the pits. The few things found within the circles, and the abundance of household utensils, implements and refuse found in the ashpits, suggest the possibility that on special occasions all the articles in the house, with ornaments, implements and other personal objects, were partly destroyed by fire and the remnants being gathered up with the ashes were deposited in a pit dug for the purpose; while the great number of broken bones of various animals mixed with the ashes and other things in the pits, indicates that at such times feasts were held. Such a custom would account for the character of the contents of the pits, and the great number of the pits would indicate a long continued occupation of the village.

During my stay in Ohio, I made several excursions to the various points of interest in Anderson Township, in company with Messrs. METZ, LOW, and CONKLING. One of the most interesting of these excursions was to the place known as Sand Ridge, and referred to

by Dr. Metz under numbers 4 and 5 of group E in his map of the Prehistoric Monuments of Anderson Township. Of this place Dr. Metz writes as follows :

" Westward from the Union Bridge, over the Little Miami river, is a ridge of land, known as the sand ridge, that forms a series of elevated plateaus, extending westwardly for about a mile, and reaches an elevation of over six hundred feet above the first plain. Its greatest width is about three hundred yards. After a steep ascent of about one hundred and twenty-five feet, the second level or bench is reached, having an area of probably four acres. This level is undoubtedly the site of an ancient cemetery (No. 4, Group E). On the surface, numerous potsherds, together with human bones, are found. Many fine relics have been obtained by the writer and others from this locality. Crossing the level, another steep ascent of about one hundred feet brings us to the third plain. In the centre of the upper edge of this plain or bench, overlooking the cemetery, was, until recently, a circle of upright stones, ten feet in diameter (No. 5, Group E). These stones were from ten to twelve inches wide, and from four to five feet in length, arranged close together and forming a circle. From this point the ascent is gradual until the highest point is reached, about six hundred feet above the Little Miami river. Over this entire slope, broken boulders, flint chips, fragments of pottery, arrow flints, stone implements, etc., are found, giving evidence of a long and continued occupation."

Many relics were gathered at this place; among them a large sharpening stone with deeply worn grooves eleven inches long and four inches wide, several rudely chipped hoc-like stones, hammerstones, chipped stone points, a few polished celts, two bone implements, and a few ornaments.

A visit was also made to "Fort Ancient," in company with Messrs. METZ, Low and COUDEN; and this, the largest and most interesting of the remaining earthworks of Ohio, was examined as thoroughly as possible under the adverse condition of a heavy rain during the day. We walked over the whole of the nearly five miles of high embankment and noticed with regret the many signs pointing to its early destruction. Although it has withstood the elements for untold centuries, it is falling before the American farmer with his all-destroying plough, his herds of cattle and droves of swine. The immense embankments, from twelve to twenty feet in height and sixty or more in width, are now gradually being undermined.

Along their summits a fence has been built, by the side of which the cattle have worn a deep path, and from this, after every rain, flow hundreds of little rills which are slowly but surely washing the earth from the top to the bottom of the steep banks. Here and there, also, a ditch has been made to drain the fields enclosed, which every spring cuts deeper and deeper into the ancient walls. After fully appreciating the immensity of this structure and realizing the enormous amount of human labor which was bestowed centuries ago upon these ancient walls and the mounds which they enclose, it was with a sigh that I turned away feeling myself powerless to save so important a monument of the past for the wonder and admiration of future generations. It would require but a few thousand dollars to secure this grand old work, and with little expense the recently destroyed portions could be restored and nature be induced again to furnish her protecting coat of verdure, and with slight care from coming generations this achievement of an unknown people would be preserved for all time to come. If the Museum should be the medium for accomplishing this desirable result, and Fort Ancient should be preserved and brought under its charge, it would undoubtedly be carrying out in the broadest sense one of the objects for which it was founded—the preservation of American antiquities.

On a hill belonging to Mr. WILLIAM EDWARDS, about one hundred and fifty feet above the level of "Big Dry Run," in the eastern part of Anderson Township, to the south of the Batavia Pike, is an interesting stone-mound which I explored in company with Dr. METZ. This mound had been opened in 1876 by a man who was present during our exploration, and he stated that he dug the hole, which extended under the roots of the large beech tree which was growing upon one side of the mound, in the hope of finding gold, but that all he discovered were the bones of two human skeletons under a layer of ashes. In our examination we found the layer of ashes and in it a few potsherds and fragments of human bones belonging to two skeletons. Although it was a disappointment to find the mound had been disturbed we had the opportunity of studying an interesting structure. A trench was run through the mound and the central portion cleared to the original surface. We found that the bodies had been placed on the surface of the hill and over them a quantity of ashes, in which were potsherds, probably the remains of one or more vessels placed near the bodies.

A vertical wall of stones, two feet eight inches high, had been built, forming a circle thirty-six feet in diameter with the bodies near the centre. The space inside this wall had then been filled up with stones which were raised in a conical form to a height of four feet three inches in the centre. Over this pile of stones there was a covering of about two feet of clay. The stones composing the mound had all been brought from the bed of a creek nearly a quarter of a mile away, and as many must have required at least two men to handle them, few being under fifty pounds in weight, the labor in making this tumulus must have been very great. Its commanding position, near the edge of a projecting point on the hill, shows that it was intended to be an imposing monument in honor of the dead, whose memory it perpetuated until their descendants had all passed away.

On the estate of Mr. MICHAEL TURNER, in the northeastern corner of Anderson Township, near the Little Miami river, is a group of earthworks which has proved to be, in several respects, the most interesting and important of the many which have been investigated in Ohio, and I am happy to be able to state that Mr. TURNER gave to the Museum the exclusive right of exploration, which has been most thoroughly conducted. In May last I visited the group with Dr. METZ, and soon after we took several men to the place and passed the day in exploring one of the mounds and trenching a large earth-circle in which, a number of years ago, Mr. TURNER, when ploughing, found a stone cist containing a human skeleton. As the time at my disposal was insufficient for a proper exploration of the group, I arranged with Dr. METZ to continue the work for the Museum. This he has done in a most satisfactory manner and we are under great obligations to him for his gratuitous labors and the care with which he has conducted the work for several months. A civil engineer, Mr. J. A. HASBROOK, was employed to make for the Museum a careful survey of the whole group, which embraces thirteen mounds and two earth-circles, all of which are enclosed by two circular embankments, one of which is on a hill and is connected with the other by a graded way. Several of the mounds contained "altars," or basins of burnt clay, on two of which there were literally thousands of objects of interest. Two of these altars, each about four feet square, were cut out and brought to the Museum. Among the objects from the altars are numerous ornaments and carvings unlike anything we have had before.

One altar contained about two bushels of ornaments made of stone, copper, mica, shells, the canine teeth of bears and other animals, and thousands of pearls. Nearly all of these objects are perforated in various ways for suspension. Several of the copper ornaments are covered with native silver, which had been hammered out into thin sheets and folded over the copper. Among these are a bracelet and a bead, and several of the spool-shaped objects, which, from discoveries made in other mounds of this group, I now regard as ear-ornaments. One small copper pendant seems to have been covered with a thin sheet of gold, a portion of which still adheres to the copper, while other bits of it were found in the mass of materials. This is the first time that native gold has been found in the mounds, although hundreds have been explored; and the small amount found here shows that its use was exceptional.² The ornaments cut out of copper and mica are very interesting and embrace many forms; among them is a grotesque human profile cut out of a sheet of mica. Several ornaments of this material resemble the heads of animals whose features are emphasized by a red color, while others are in the form of circles and bands. Many of the copper ornaments are large and of peculiar shape; others are scrolls, scalloped circles, oval pendants and other forms. There are about thirty of the singular spool-shaped objects, or earrings, made of copper, like the two described in the last Report (figs. 18, 19). Three large sheets of mica were on this altar, and several finely chipped points of obsidian, chalcedony and chert, were in the mass of materials. Several pendants, cut from a micaceous schist³, are of a unique style of work. There are also portions of a circular piece of bone, over the surface of which are incised figures, and flat pieces of shell similarly carved. Several masses of native copper were on the altar.

But by far the most important things found on this altar were the several masses of *meteoric iron* and the ornaments made from this metal. One of these is half of a spool-shaped object, or ear-ornament, like those made of copper, with which it was associated. Another ear-ornament of copper is covered with a thin plating of

² Dr. HILDRETH, Arch. Amer., vol. I, p. 176, 1820. states that he was *told* that a gold ornament was found in a small mound near Chillicothe, Ohio. This proved to be copper. See SQUIER and DAVIS, Ancient Monuments, p. 279, 1848.

³ I am indebted to Dr. M. E. WADSWORTH, of the Geological Department of the University, for this determination and also for other similar favors.

the iron, in the same manner as others were covered with silver. There is also a folded and corrugated band of iron of the same shape and of about the same size as the band of copper found in a mound in Tennessee and figured in the last Report (fig. 16). Three of the masses of iron have been more or less hammered into bars, as if for the purpose of making some ornament or implement, and another is apparently in the natural shape in which it was found. As all these iron masses were exposed to great heat on the altar, they have become more or less oxidized, and two of them were so much changed in external character that several good mineralogists, as well as myself, mistook them for masses of limonite, or bog iron, which had probably formed since the mound was erected. The discovery of iron in the mound was of course a matter of great interest, from whichever side it was viewed, and it was therefore of the first importance that its character should be accurately determined. For this purpose I have been fortunate in securing the coöperation of Dr. L. P. KINNICUTT, Assistant in Chemistry in Harvard College, who has become much interested in the work and has made careful analyses of all the masses and objects of iron. Dr. KINNICUTT has found that each and all contain *nickel*, and that *all the iron is unquestionably meteoric*.⁴ As this is the first time that objects made of meteoric iron have been determined from the mounds, it is of great interest, and it will now be necessary to examine anew the statements made by Hildreth and Atwater in relation to the traces of iron which they found in mounds in Ohio over sixty years ago.⁵

⁴ The quantitative analyses have not yet been made, but as noticed farther on, Dr. KINNICUTT is to furnish a detailed account for publication in this report.

⁵ Since this was written I have obtained for study, from the American Antiquarian Society, the several specimens described by Dr. HILDRETH (*Archæologia Americana*, vol. I, p. 163, 1820), from the mound at Marietta. I shall furnish a full description of these articles to the Antiquarian Society, and it is only necessary to state here that Dr. Hildreth was mistaken in their character. The "silver plated bosses," which he thought were ornaments from a sword belt, are identical with the silver plated ear ornaments I have mentioned above. The corrugated silver band which he describes as the "upper part of a sword scabbard," is of the same shape and character as the corrugated band of meteoric iron from the altar referred to above and like the copper band described in the last Report (fig. 16). This is also of the same character as the copper ornament taken from a mound in Cincinnati in 1794, and figured by BARTON; *Trans. Am. Phil. Soc.*, vol. IV, p. 180, fig. 10, 1799. The "Copper tube" which Dr. Hildreth regarded as the "end of the scabbard," is simply a much oxidized copper bead, and the only signs of anything that could be taken for "the iron rust which filled the tube" were oxidized grains of copper.

It is worth recapitulating here that *native* gold, silver, copper and iron were all found on the altar of the large mound in this group, and that all were manufactured into ornaments simply by hammering.⁶ A mass of lead ore, galena, was found in another mound of this group.

On another altar, in another mound of the group, were several terra-cotta figurines of a character heretofore unknown from the mounds. Unfortunately, these objects, as well as others found on the altars, had been more or less burnt, and many of them appear to have been purposely broken before they were placed on the altars. Many pieces of these images have been united and it is my hope that we shall succeed in nearly restoring some of them. Enough has already been made out to show their importance in the study of early American art. The peculiar method of wearing the hair, the singular head-dresses and large button-like ear-ornaments shown by these human figures are of particular interest. The ear-ornaments leave no doubt of the character of the spool-shaped objects referred to on a previous page. On the same altar with the figurines were two remarkable dishes carved from stone, in the form of animals, which we have nearly restored from a large number of small fragments. With these was a serpent cut out of mica. On the same altar were several hundred small quartz pebbles from the river, and nearly three hundred astragali of deer and elk. As but two of these bones could be obtained from a single animal, and as there were but one or two fragments of other bones, there must have been some special and important reason for collecting so large a number of these particular bones. A finely made bracelet of copper and several other

From these misconceptions, for over sixty years archaeologists have been misled in regard to the antiquity of the Marietta mound.

The references to iron found in a mound at Circleville, by Mr. ATWATER, are hardly worth considering (Arch. Amer. I. p. 178). He simply found a worked piece of antler, with a hole at one end, around which was a band of silver. This he *called* a knife or sword handle, and he says distinctly that "*no iron was found*, but an oxyde remained of similar shape and size." In this connection masses of burnt clay are spoken of as "bricks very well burnt," and a large sheet of mica is called a "mirroure, which answered the purpose very well for which it was intended." From such expressions the lively imagination of the author can be appreciated.

The other reference, on the same page, is as follows: "A plate of iron, which had become an oxyde; but before it was disturbed by the spade, resembled a plate of cast iron." Certainly something more definite than this statement is required before it can be said that *cast* iron has been found in the ancient mounds.

⁶ I may add that I have found no difficulty in cold hammering a piece of the *meteoric* iron into a thin sheet by using two stones; also that a quantitative analysis by Dr. KINNICUT shows the gold and silver to be *native*, as stated above.

ornaments of copper, a few pearls and shells and other ornaments were on this altar. Two large masses of native copper and one mass of unworked meteoric iron were also on this altar. Many specimens of fossil shells were found on the two altars.

This brief mention of the large amount of material obtained from the several "altar mounds" is given simply to convey an idea of the importance of the collection. It will take a long time to assort and arrange it for study; but I hope to be able, in the course of the year, to furnish a full account of this group of mounds with an illustrated description of all the objects found in them.

The mounds themselves are no less interesting than the objects which they contained, and as Dr. Metz took careful notes and made sketches during the exploration, we shall, I trust, in our joint memoir, be able to furnish a satisfactory account of the whole group.

The larger of the two mounds within the earthwork on the hill, a plan of which was published by Col. Whittlesey in 1850, proved a most interesting structure, unlike anything heretofore discovered. It contained a small central tumulus, surrounded by a carefully built stone wall and covered in by a platform of stones, over which was a mass of clay. On this wall were two depressions in each of which a body had been laid, and outside the wall in the surrounding clay were found several skeletons, one of them lying upon a platform of stones. With these skeletons were found a copper celt, ornaments made of copper and shell, and two large sea shells. With each of three of the skeletons was a pair of the spool-shaped ear-ornaments of copper, and in every instance these ornaments were found one on either side near the skull. The thirteen mounds within the large enclosure differ so much in their structure that detailed descriptions of each would have to be given, in order to convey a correct idea of this singular and interesting group. I will mention, however, that under one of the altar mounds a large ashpit, six feet deep, and similar to those in the ancient cemetery at Madisonville, was discovered, and under another altar mound were several pits of smaller size but of similar character. Beneath a small mound containing skeletons, was an excavation six feet wide and twenty-seven inches deep, filled with ashes mixed with animal bones, potsherds, and other objects. This is the first time that pits of this character have been discovered in connection with the mounds, and their presence gives an

additional interest to this group. In another mound, containing a human skeleton, a small copper celt found on the bones of a hand is of special interest, as it has a cast of the papillæ of the fingers distinctly preserved in the carbonate of copper. Under the centre of one mound there was a bed of ashes in which were three pottery vessels.

A singular stone-covered mound, situated on the southern bank of the river near the group, was also explored by Dr. METZ. This mound was stratified, and its central portion was made up entirely of ashes and animal remains similar to the contents of an ashpit. A portion of this mound had been washed away by the river, and it is said that in 1880 two skeletons were exposed and were taken out by a gentlemen from Mt. Carmel, Ohio. The surface of the mound was entirely covered with small stones of nearly the same size and color.

Three other mounds in Hamilton County were also explored by Dr. METZ, as follows :

The Langdon Mound, near Red Bank, was eight feet high and about fifty feet in diameter, and composed of a sandy loam, covering an oval bed of ashes and charcoal, twelve feet long, eight feet wide and ten inches thick in the centre, on which were three stone celts, partly covered by the sandy loam. Under the central portion of the ash-bed a circular cavity, or basin, one foot deep and five feet in diameter, was discovered. This contained ashes and charcoal, and a number of small pieces of burnt bones, probably human. The basin had been dug in the earth beneath the mound, and immediately about it the earth was burnt to a depth of three or four inches, showing that there had been a fire in the basin, and there can be little doubt that this was an instance of cremation of a human body.

Another mound was opened about sixty feet south of the Langdon Mound. This was about thirty feet in diameter and three and one-half feet in height. In the centre was a bed of ashes and charcoal about three inches thick, containing a few animal remains and shells of the fresh-water clam.

On the farm of Mr. Gould, about two miles from Reading, a conical mound, on an elevated site, was explored. This mound was six feet high and sixty feet in diameter at the base. An earth embankment, three feet high and twenty-two feet wide at its base, encloses the mound, forming a circle about it one hundred and fifty

feet in diameter, measured from the outside of the embankment. This circle has an opening thirty-seven feet wide looking to the southeast. The mound was found to be stratified. The outer layer was composed of fifteen inches of very hard yellow clay. Under this was a layer, ten inches in thickness, of burnt clay, mixed with ashes and charcoal. The clay in this layer was burnt to a brick-red color and was very hard. Below this was a stratum of compact grayish ashes containing pieces of burnt stone. This layer was fifteen inches in thickness. Beneath this was ten inches of burnt clay in which were a small chipped flint and a fragment of burnt bone, which was the only piece of bone found in the mound. Beneath this last stratum, and occupying the central portion of the mound, was a conical heap of hard gray earth in which were small flakes of charcoal. This gray earth was so hard that it could only be removed by the use of the pick. It was eight by ten feet in diameter and twenty-two inches in thickness in the centre. Under this hard mass, and below the natural surface of the clay, were four circular pockets or excavations, each of which was ten inches deep and fourteen inches wide. These pockets were about four inches apart. Three of them were filled with a dark, pasty substance which became hard on drying, and the other contained fragments of stone, burnt clay and earth. The structure of this mound is unusual, and the purpose for which it was erected over the four small holes is at present unknown, adding one more to the problems relating to the mounds, which we can only hope to solve by thoroughly exploring such as have not yet been disturbed. Unfortunately, the number of these is rapidly decreasing and but little time is left for the work. In this connection I am glad to be able to state that Dr. METZ is continuing his labors for the Museum, and is now engaged in exploring another group of mounds in the Little Miami valley.

Besides the special explorations to which reference has been made, Dr. C. C. ABBOTT has sent to the Museum a considerable number of specimens obtained about Trenton, N. J. Among these were several implements taken from the gravel, and many interesting arrowpoints and other chipped implements found in the ploughed fields and procured of the farmers in that neighborhood. As Dr. ABBOTT is desirous of supplementing, by choice or unique forms, the collection of over twenty thousand stone implements he has sent to the Museum in past years, we have received from him many fine

specimens during the year. Besides stone implements he has sent us two spearheads of native copper, which are the first known from the vicinity of Trenton. As these were received while the last annual report was passing through the press, they were described and figured in my paper on copper ornaments and implements.

While prosecuting his researches in the gravel beds in which he has found so many paleolithic implements in past years, Dr. ABBOTT was so fortunate as to discover a human molar *in situ* in the gravel, and as there can be no doubt that this rolled and worn tooth is of the same age as the stone implements found in the gravel, we have in this valuable relic the undoubted remains of a paleolithic man. The discovery of this tooth is also of importance in removing the little remaining doubt as to the actual occurrence in the gravel of the large portion of the human skull sent by Dr. ABBOTT to the Museum, a few years ago, with the statement of the person from whom he obtained it that it was found in the gravel. The human tooth has been added to the collection in the Museum, and in October last, Dr. ABBOTT read before the Boston Society of Natural History a full account of its discovery, which will be printed in the Proceedings of the Society.

From Miss ALICE C. FLETCHER the Museum has received a very important addition to the collections relating to present Indian tribes. Miss FLETCHER was for some time among the Omaha and Sioux Indians, going to them for the purpose of studying their home life and religion. Her great interest in the Indians and her efforts to advance their cause have made her a welcome friend to several of the tribes, and she has obtained an insight into their character and home life, such as could only be secured by throwing heart and mind into the work. The estimate which she has formed of the character of the Indians with whom she has been is considerably at variance with that of persons who have looked at Indian life wholly from the outside, and if, as she desires, she should be able to continue her work among the tribes, undoubtedly we shall receive a more thorough knowledge of their character, home life and institutions than has yet been given to the world. Her intimate connection with the Omahas, particularly, has enabled her to procure for the Museum many things illustrating a phase of life rapidly passing away as the Indians endeavor to meet new conditions surrounding them. It is, therefore, greatly to be hoped that on her return to the Indians,

which will probably soon take place, the Museum may have the means to offer her the assistance needed to secure a full representation of all that is still to be had illustrative of tribal life and customs. In this connection I have great pleasure in informing you that already the Museum has received \$500 from one friend and \$50 from another, for the furtherance of Miss FLETCHER's work among the Indians.

During Miss FLETCHER's visit to the Ogallala Sioux she witnessed the ceremony known as the "Sun Dance," which was attended with many interesting ceremonies and lasted for several days. Thanks to her foresight and care, and the coöperation of Dr. V. T. MCGILLICUDDY, at the Agency, we have received a nearly full representation of the many things used in the various ceremonials of the dance. These include the painted buffalo's skull, the miniature representations of a man and of a buffalo, cut from buffalo hide, which were tied to the pole; the wooden skewers which were passed through the flesh of two of the men who were fastened to the pole; the sacred board on which objects were consecrated over the fire; the sacred pipe and its stand; the wands carried by the men taking part in the ceremony, and the ornamented sticks offered as propitiatory gifts, representing horses and other valuable property. This is the first time such a collection has been made, and its importance as illustrating one of the most interesting religious observances of Indian life cannot be overestimated. In view of the rapid changes taking place, it is not improbable that this was among the last opportunities for gathering such materials. The importance of this collection is increased by the account of the ceremony which Miss FLETCHER has prepared for publication.

To Dr. MCGILLICUDDY we are greatly indebted for his assistance in completing the series of articles mentioned above, several of which could not be obtained till some time after the ceremony, and then only by persistent effort. To Mr. SAMUEL GARMAN we are under obligation for packing and attending to the transportation of a number of these articles.

We are also indebted to Mr. GARMAN for several interesting specimens of stone and iron implements, which he obtained while among the Indians during the past summer.

In the autumn Miss FLETCHER was for several weeks at the Museum, labelling the specimens she had secured, and working

over her material and notes. At this time she gave a lecture in the Museum upon "Home Life among the Indians," which was attended by a very large and appreciative audience. She also spoke before the Boston Society of Natural History, and at other places during her stay in Boston. Her remarks on these occasions have done very much toward enlightening the public upon the character of the Omaha and other Indian tribes with which she has been in contact.

In connection with this ethnological work, an educated Omaha Indian, twenty-five years of age, Mr. FRANK LA FLESCHE, was invited to make me a visit; and while he was my guest I was enabled not only to ascertain many facts of great interest in regard to Indian character and customs, but also to obtain several traditions, myths and stories, which, as they have ethnological value, I put into writing as he told them. On leaving Cambridge, and before returning to his post in the Indian Bureau at Washington, Mr. LA FLESCHE made a visit to his parents among the Omahas, in the course of which he gathered particular information about the migrations of the Omahas and about a mound of which he had told me. These statements are of such interest, especially in relation to the recent erection of burial mounds by some of the Indian tribes, that I give his letter in full:

WASHINGTON, D. C., January 15, 1883.

DEAR PROFESSOR:

In compliance with your request, I made inquiries about the mound made by the Omahas, in which Big Elk was buried, and was told that it was about as high as a tall man's shoulders, standing up, and that he was buried with great ceremonies. His favorite horse was strangled to death by his grave, and most of his horses and household goods were given to the poor. It is said that a short time before his death, when he got back from a visit to the east,⁷ he made a speech to the Omahas and said:

"My Chiefs, Braves, and young men, all, I have just returned from a long journey toward the coming of the sun, and bring you sad news; my heart is full of sorrow for you, when I think of the future and what is coming. There is a great flood coming and it will soon be here. I am now old and am near the grave and may be gone before it comes, but I am sure it will come, and soon the wild animals which God has given us for sustenance will disappear beneath this flood; even the birds will not be able to find resting places. Some of you may not comprehend my meaning, but the time is not far when you will know but too well my meaning, so those of you who understand me, prepare yourselves for it, and think what will

⁷This probably refers to his visit to Washington in 1821.

be best for this people. I am old as you see me and can no more think for you and lead you."

The place where he is buried is called or known by the Omahas as "Big Elk's Grave," but by the whites as the "Black Bird Hills," as Black Bird was buried in the same place. It is said that Black Bird was buried with but very little ceremony, as he died when the Omahas were being very much troubled with the small-pox, and was *not* buried, riding a live horse, as is stated by some. A grandson of his is still living and is about a hundred years old; he cannot remember when his grandfather died, but thinks shortly before he was born. He has Black Bird's other name, Tan-wan-ga-ha or Town-maker, and was one of the hereditary chiefs, but is not recognized as chief now, as he is very old and can no more attend the councils.

If it is more than a hundred years since the death of Black Bird, it must be nearly two hundred years now since the migrations of the Omahas, Poncas, and the Iowas north, from near St. Louis, as he died since the Omahas migrated to a place now called Bellevue, in Nebraska. When they migrated from near St. Louis they went up between the Mississippi and the Missouri and made a village north of the Pipe-stone quarries, and remained there several years. The neighboring tribes drove them southwest to the Missouri river, to a place called "the place where snow-birds were shot," where they remained several years, then moved down the river to where the Ponca reservation is, and there they lived several years; then the Omahas and Iowas left the Poncas there, and moved on, still down stream, till they got down as far as a place called Ponca, where they made a village, and remained several years. Then the Omahas, leaving the Iowas there, migrated still down stream until they got to the place now called Homer, and there made a village and remained several years, and it was there they saw the first steamboat go up the Missouri; then the Poncas and the Sioux made war on them, and drove them still southwest to the Elkhorn river, where they lived until they were again driven southeast, to the Missouri, by the Pawnees, Poncas and Sioux. Before moving southwest from the place near Homer, they punished the Poncas very severely, and would have exterminated them had they not brought out their Pipe of Peace, and thus saved themselves. Then after they had moved to Elkhorn river, they tried to make peace with the Pawnees, but not succeeding in that attempt, moved against them with the whole camp, and found the Pawnee village situated on the Republican river near a place now called Red Cloud, on the same river, strongly fortified by high earthworks. The Pawnees fought bravely for a while until the leader of the Omahas, notwithstanding the thickness of flying arrows, climbed the earthwork and was quickly followed by his men, driving the Pawnees into their mud lodges; but the Omahas dug into the sides of the lodges and set fire to the grass laid underneath the earth covering, and thus burned many to death, and the work of extermination would have kept on had not the Pawnees brought their Peace-pipe into requisition. The leader of the Omahas was "Wa-ba-ska-ha;" his aid was "Ta-hai-zin-ga."

It is said that the remains of the Pawnee earthworks can still be seen. Since the Pawnee war the Omahas moved against the Otoes, but not with success, on account of a mistake made by one of the leaders, "Wa-lia-gi," and were driven back with equal loss to both parties.

The Omahas say that three miles east of the pipe quarries there is a mound about nine or ten feet high and very large, surrounded by a large ring of earth piled up, and it is supposed that in that mound are buried the remains of warriors and their weapons of defence.

Very respectfully,

FRANK LA FLESCHÉ.

In March last Mr. FRANK CUSHING visited the Museum with several Zuñi chiefs and a Moqui from Zuñi, where Mr. CUSHING had lived for some time. This visit was one of great interest. A reception given at the Museum was attended by several hundred persons who were glad to see representatives of the Pueblo tribes and hear Mr. CUSHING's remarks about them. By those among us who are especially engaged in ethnological studies, this visit will be valued from the insight which it gave into the character of these people and from many little things which were learned from them in regard to objects in the Museum; while the impressive religious rite performed by the party on the shore of Deer Island, when Mr. CUSHING was formally admitted into one of the higher grades of a religious order, gave, to those who were so fortunate as to witness it, new ideas in relation to Indian character, and impressed upon all the sacrifice which Mr. CUSHING was making for ethnological science as well as for the well-being of his Indian friends. It is a satisfaction to know that he has returned to Zuñi accompanied by a devoted wife to share his labors.

As will be seen by the accompanying List of Additions to the Museum, about four thousand entries, representing many times that number of specimens, have been made in the catalogue as accessions to the Museum during the past year. A large proportion of this increase, which is beyond that of any preceding year, is due to the special explorations which were conducted by means of the money subscribed to aid archaeological research in this country. Still, we have received many valuable additions from friends in various parts, and while I must refer to the list for detailed information of these gifts, I cannot omit calling particular attention to a few.

The collection presented to the Museum by Mr. ALEXANDER AGASSIZ embraces a very interesting series of carvings in stone from Yucatan ; portions of stone ornaments from the ruins at Uxmal and Chichen ; a lintel of wood from a doorway of a ruin in Chichen ; carved stones, obsidian knives and cores, pottery ornaments and other antiquities from Oaxaca and Cholula ; two copper axes from Oaxaca, described in my article on copper objects in the last Report ; a representative collection of recent pottery made by the natives at Merida, and several photographs of large carved stones in the National Museum of Mexico, all of which were obtained by Mr. AGASSIZ during his recent travels in Mexico. A number of baskets and cords made by the Caribs of Dominica, with specimens of the materials used in their manufacture, were also received from Mr. AGASSIZ.

To the Hon. STEPHEN SALISBURY, the Museum is indebted for the collection from several mounds on Devil River, on the west shore of Lake Huron, consisting of human remains and objects found with them. These mounds were explored by Mr. HENRY GILLMAN who published a short account of them in the American Naturalist for January last.

We have also recently received another specimen of the singular Mexican T-shaped implements, made of copper, similar to those from Oaxaca which I described in the last Report. For this specimen we are indebted to Dr. P. J. J. VALENTINI, who was so kind as to send it to me as an expression of his appreciation of my article on Mexican copper implements. This specimen is much smaller than any described in my paper, and, as Dr. VALENTINI points out, could hardly have been used as a hoe. He writes me he has come to the conclusion that after sharpening the semilunar edge and giving to the shank a proper handle, we should have a knife of similar shape to that in use by leather workers to-day. He also states various reasons for believing the Mexicans had some such cutting implement. In support of this theory I may mention that we have in the Museum small *bronze* knives with semilunar blades from Peru, and were these Mexican implements provided with sharp cutting edges, I should have no hesitation in agreeing with Dr. VALENTINI that they were knives. The blunt, dented, and generally battered condition of the semilunar edges of all which I have seen, however, indicates a rougher use

than would be made of knives, so that I am rather inclined to regard them as tools used in some of the arts; it may be in that of the potter. They would answer admirably for scraping and shaping clay vessels in the same manner as thin pieces of wood or gourd are now used by the natives of both North and South America. That the several specimens which have come to my hands have been used, and are not simply implements in the rough, is also shown by the rounded and polished semilunar edges of all when examined under a lens. The purpose for which these implements were made, however, cannot yet be considered as determined.

The small lot of native weapons from the Island of Java, collected in 1825 by Dr. D. F. G. VAN DE SAND, and presented by his daughter, Mrs. B. PICKMAN MANN, adds several forms of weapons new to our collections.

To Dr. SAMUEL KNEELAND we are indebted for an instructive series of specimens, illustrative of the customs and manufactures of the natives of the Philippine Islands; besides articles from Japan, Samoa, Fiji, New Britain, the Caroline Islands and the Pacific coast of America, which in the course of his recent travels he was so thoughtful as to collect expressly for the Museum.

Principal J. W. DAWSON, of McGill College, Montreal, has given to the Museum, two nearly perfect crania, pieces of pottery, and several casts of pipes, representing the objects found in excavating within the college grounds, the site of the old Indian village of Hochelaga. An account of these excavations and discoveries was published by Dr. DAWSON several years since in the "Leisure Hour."

From Mr. J. SUTTON WALL, we have received a photograph of one of the "Picture Rocks" in Pennsylvania, which is of particular interest for comparison with Dighton Rock and other Indian pictographs.

The ARCHEOLOGICAL INSTITUTE OF AMERICA has presented a large lot of fragments of ancient pottery, stone implements and other objects collected by Mr. A. F. BANDELIER, on the sites of old pueblos and ruined cliff-houses in the valley of the Rio Grande and other places in New Mexico, during his expedition of 1882, under the direction of the Institute.⁸ This collection is of especial

⁸ Since this was written, Mr. Bandelier's Report to the Institute has been printed in the first number of its Bulletin and contains much valuable information relating to the collection here referred to.

value as it is from so many sites of ruins of different periods, and confirms the statement which I have several times had occasion to make, that the ancient pottery of the Pueblo tribes is far superior to that now made at the inhabited pueblos. None of the pottery is glazed, using the word in its proper sense, notwithstanding the statements of some writers to the contrary, but much of it is decorated with a colored substance which has a glossy surface, and the thin wash of light colored clay with which some of the specimens are coated has, from its high polish, the appearance of glaze. All the ancient pottery is burnt very hard, and is in this and other qualities unlike the trash sold in the stores as Pueblo pottery. Most of the latter is made by the Indians about Santa Fé, according to directions received from the dealers, and is not only of a rude character, but is often formed and decorated from designs obtained from the whites. I have even noticed that during the past year or two the figures on the pottery found by Schlie-mann at Hissarlik have become common on the so-called Pueblo pottery and the "suastika" is now often represented.

In this connection, and as illustrative of the demand and supply of ethnological and archæological specimens, I may mention a large carved stone, sent to the Museum subject to purchase, representing a naked child about two feet in length, which was said to have been dug up near the Eureka Springs in Arkansas. The stone was partly enclosed by a cement, which, it was said, covered the stone when it was found. This piece of carving proved to be a child of the "Cardiff Giant" family. The fraud was unquestionable, and the image was returned to its owner with a full statement of the evidence against it, and the request that the object be destroyed in the interest of science. Since then I have heard nothing more of it, and in case it has not been destroyed this notice will serve to put others on their guard. The character of the art was sufficient to show that the carving was not a piece of Indian work, either ancient or modern, but the following statement by Dr. WADSWORTH of the Geological Department of the University will be convincing to all that the thing was a fraud.

Agreeably to your request, I submit, herewith, the results of my examination of the "Arkansas Stone Baby."

The image, itself, so far as could be told from the restricted examination I was allowed to give it, is composed of a fine grained, somewhat earthy,

limestone. The matrix in which the image is now partly inclosed is composed of a fine ashlike material, mixed with chalk, etc. It is cellular, porous, and absorbs water readily. Many of the cells extend from the surface of the matrix, entirely through it, to the surface of the image itself.

The cells and pores are entirely free from any matter either washed in or infiltrated; hence, it is exceedingly doubtful if the image was ever under ground, while it certainly could not have remained there any great length of time, if it has ever been so placed. The freshness of this apparently easily altered matrix also points in the same direction.

It is, however, not necessary to insist upon these points, since entirely inclosed in the matrix I find portions of *undecayed* gramineous leaves, and a fragment of coarse yellow paper, such as is used for handbills, still retaining the marks of the printer's ink!

Of course, in the light of these facts, further discussion is unnecessary.

M. E. WADSWORTH.

Museum of Comparative Zoölogy,

March 23, 1882.

This is, however, but one of the many fraudulent specimens offered for sale; we have received a number of pipes, tubes, dishes, ceremonial and other objects, made in Philadelphia and sold as having been found in such or such a locality. The variety of the articles made by the Philadelphia manufacturer, and the character of the work, are such that many have found their way into collections in this country, and not a few have supplied the foreign demand for American antiquities. A manufacturer in Indiana confines his attention chiefly to "mound-builders' pipes" which are carved from stone and offered in a systematic method to collectors. In Ohio, a large business has been done in the so-called gorgets, cut from slate, and in hematite celts. In southern Illinois, a few years ago, many specimens of pottery were made until the demand fell off, so that one manufacturer acknowledged that he was no longer paid for his trouble by their sale. Another man who made this pottery is, I believe, no longer living, but much of his work is still extant. This list might be lengthened, but it is already sufficient to show that the demand for "antiquities" is considerable in this country, and that we are not behind the old world in keeping up the supply.

Early in the year, more of the singular shoes, made from the braided leaves of the *Typha*, such as I obtained in Salt Cave, Kentucky, in 1873, were received from Mr. WILLIAM D. CUTLIF, who accompanied me in my visit to the cave, and last winter made

another exploration of its recesses. Like the first lot, all these shoes are worn through on the sole. Mr. CUTLIFF also found several more gourds, and two fragments of cloth woven from bast, of a pattern unlike that previously found in the cave.

A small collection of fragments of pottery and a few other articles, collected in 1857 from a shellheap in Mobile Co., Alabama, were obtained by purchase, and are of especial interest on account of the similarity in character of the pottery to that with which we are now so familiar from the mounds and graves of south-eastern Missouri. Several of the pieces are ornaments or handles of dishes, made in imitation of heads of birds, of mammals, and also of man, so common in the Missouri pottery, and the structure of the ware from the two localities is also the same. This is of importance in showing that the shellheap in question was made by a people closely allied to, if not the same as, those who buried their dead in the mounds of southern Missouri and Illinois. The character of the ornaments is so marked that it is impossible to consider the art of the two localities as having had distinct origins. It was certainly transmitted from one to the other, or else derived from some common source by the people of the two places. As this little collection is of much importance, and as the account of the shellheap written by Major W. T. WALTHALL is one of the earliest showing that the heaps are artificial, I give his description, reprinted from the Mobile Tribune of August 11, 1859.

The mouth of Bayou Coq d'Inde is approached by a winding woodland path, that runs along the eastern bank of the bayou from the bridge. In order to reach it from the Portersville side, one has to cross a lesser bayou, or marsh, by a ragged and rather perilous causeway, or else to make a circuit through the woods around the head of this marsh, which approaches very near to the Bayou Coq d'Inde, leaving only a narrow isthmus of *terra firma* between them. The position would be a very excellent one for defence against a hostile force in an age of rude warfare; with the gulf in front, the bayou on one side, and the marsh on the other, nearly meeting the bayou in the rear. It is easy to understand, therefore, why it should have been chosen for the site of an Indian town, village, or occasional encampment.

The "shell-bank" extends along the bayou for two or three hundred yards, forms a large mound or hillock just at its mouth, bends around towards the marsh mentioned above, and again recedes from the shore. Its general outline may be likened to that of a huge fish-hook, with the shank laid alongside of the bayou and the convexity of the curve facing the sea.

This bank is composed of oyster shells—not deposited there by any process of nature, as some have hastily imagined, for no natural cause could possibly have accumulated such an immense collection of oysters in one spot on dry land. Moreover, the shells dug from underneath are not broken or abraded, as they would have been by the action of the waves or currents, but retain their sharp and jagged edges in perfect preservation.

The whole area included by the shell-bank is about ten acres, but excluding the part in the hollow of our imaginary “hook,” not occupied by shells, it may be estimated at six or seven acres. The depth of the shells from their surface to the level of the adjacent land is in some places as much as twelve or fifteen feet, but taking them throughout the whole extent the average depth may be assumed to be about seven feet. Supposing the extent to be six acres, with an average depth of seven feet, the whole bank would contain nearly 70,000 cubic yards, or about a million and a half bushels of shells! The Messrs. Rabby, proprietors of the greater part of the bank, have been, for some months, engaged in excavating it for the purpose of shelling the “Bay Road,” and have already delivered some 250,000 bushels or thereabout, without apparently diminishing the bank to the extent of more than a fifth or sixth of its bulk. These are rough estimates (except as regards the amount delivered to the Bay Road Company) made merely by the eye, without the aid of any instrumental measurement, but they cannot be very remote from accuracy.

When it is remembered that this immense quantity of oysters must have been brought from distant reefs; that the settlement which consumed them must, from the nature of the ground, have been of limited extent; and that the oysters constituted but a portion—probably a small portion—of the food of the inhabitants; when all these things are considered, the curious inquirer may form some idea of the time that must have been occupied in the accumulation of this vast shell-mound.

More than a century must have passed—how many centuries it *may* have been, there are no data for determining—since the last shell was flung upon the pile by its dusky builders. Soil has gathered over it, and large trees have sprung from the soil, searching out, with their long, interlacing roots, the hidden secrets buried among these remarkable relics of former ages. In the midst of this fine grove, and on the highest part of the bank, Mr. Delmas, proprietor of a part of it, has established his residence. A little nearer the water he had erected a “store-house” for supplying the miscellaneous wants of the neighborhood. A more secluded and romantic spot could hardly have been found for such an enterprise; and one might question its adaptation for the purpose, except for the facility of access by water. The recent excavations, however, were rapidly undermining the premises at the time of my last visit to them, and the proprietor was preparing to lower his whole establishment with its contents, to the new level of the excavated part. The excavations just spoken of have brought to light some interesting secrets of the interior of the shell-bank. Great quantities of broken pottery are found, and many curious relics of rude aboriginal art, in the shape of pipes, figures of reptiles,

waterfowl, owls, and other animals, as well as human heads and busts. In many places may be seen the remains of fires — ashes and pieces of charcoal, looking as fresh as if left there but yesterday — with the bones and scales of fishes lying around. The pieces of charcoal and some of the other remains crumble to pieces on being touched.

But more curious than all are the human skeletons found scattered here and there at a depth of several feet below the surface. Some of these crumble to dust on being touched, and others are broken into fragments by the spades and picks of the workmen, but portions of them are occasionally met with in good preservation. How these skeletons came there is a question difficult of solution. There are not enough of them to warrant a conjecture that the “bank” was used as a place of general sepulture, and there are too many to admit of the supposition that it was kept sacred for the interment of a few chiefs or persons of distinction. The remains are not found in any one spot, nor do they seem to have been disposed with any regularity — scattered as they are in different places, and some lying in one direction (as regards the points of the compass), some in another. Moreover, there is nothing in the accessories, or in what we know of the shell-banks, to sustain the idea of sepulture. It is almost as difficult to believe that the remains are those of the slain in some battle fought upon the spot, and that they were left to moulder where they fell. The case of the bones found by the first French discoverers on the Isle of Massacre, or Dauphine Island, is altogether different. If our information respecting the habits of the tribes that dwelt in this part of the country were not opposed to such a supposition, we might more readily believe them to be the *débris* of cannibal banquets. Even as it is, they may have belonged to a people anterior to any of whom the traditions have reached us.

Yet another conjecture may be made, with perhaps more of plausibility. In examining the recent excavations of the shell-bank, several strata of earth, alluvium, or mould, may be observed at irregular intervals of depth below the surface of the shells. These strata are generally thin and shallow, but the most conspicuous of them is about two inches in depth. So far as the very limited observations of the writer of this article extend, the human skeletons, as well as the remains of fires, charcoal, ashes, fish-bones, etc., appear generally to lie in the midst of, or immediately below, this stratum. Speaking of the phenomenon to a gentleman who resides on the coast, he remarked that a similar deposit was left over everything after the subsidence of the great flood of 1852. May not these alluvial strata then be the effects of hurricanes and floods in former ages, which have thus left their history written among the shells of Bayou Coq d’Inde? May not the bones be those of victims of some one of these storms, which was so formidable as to sweep away the whole settlement, and deter the survivors from returning to the spot, even to gather up and bury the bodies of the dead — perhaps for years? Or it may be that some superstition intervened to the same effect.

There are serious difficulties in the way of these theories, and the data

are too imperfect to allow any of them to be urged with confidence. It is much to be regretted that some scientific observer could not be on the spot to watch the process of digging away this ancient and curious structure, and to note the facts that would throw light upon its history and the archæology of our coast. What is here stated is gathered only from the observations afforded by a few brief and hurried visits.

I have proceeded upon the supposition that the shell-bank marks the site of an ancient town or village, but even this is by no means settled. It may have been only an occasional camping-ground or place for feasting, or it may have been a winter residence for some roving tribe. A dozen, or a score, of conjectures might be offered. There are other shell-banks along the coast—one of them at the mouth of the Bayou Como, only about a mile to the eastward of Bayou Coq d'Inde—though none so extensive as the one above described.

Allowing five bushels of oysters per annum to each individual—man, woman and child—a village of five hundred persons would have been occupied six hundred years in consuming a million and a half of bushels. If there was a permanent settlement at the mouth of Bayou Coq d'Inde, it is not probable that it contained more than five hundred or a thousand persons. If there was no permanent settlement, the time requisite for the accumulation of the shells must have been still greater. View it as we will, we are carried far back into the mystic depths of the past. It is a curious thought—though by no means an improbable one—that the materials, of which we are now building a road to be rattled over by the fast men of Mobile, may be the integuments of shell-fish eaten at Indian feasts when our own ancestors were crusading in the Holy Land.

Imagination revels in such fancies; and sitting on the quiet banks of Bayou Coq d'Inde, with these relics of former ages around us, we may well listen for the notes of that “mysterious music,” which is said to be heard here and elsewhere on the coast—the wail of the lingering spirits of the long-departed warriors and maidens of these beautiful shores.

A gift of great ethnological value has been made to the Museum by the HEIRS OF E. P. TILESTON and AMOS HOLLINGSWORTH. This consists of one hundred and five oil portraits of Indians of various North American Tribes, of life size. Most of them are paintings of considerable merit, by C. B. KING. Sixty-eight of the number are the originals of the plates in M'Kenny and Hall's “Indian Tribes of North America,” published in 1836, in which work are given more or less extended accounts of the persons represented. It is understood by the heirs that other portraits belonging to the series, now in the possession of members of the families, are to become the property of the Museum in accordance with the expressed wish of the late MESSRS. TILESTON and HOLLINGSWORTH that the collection should not be broken.

We have also received from HARVARD COLLEGE an oil painting of a Sioux hunter, by Capt. EASTMAN.

As in the two preceding years, the books and most important pamphlets, received at the Museum are sent to the College Library to be entered in the Quarterly Bulletin of the University libraries. The card catalogue of the library has been kept up by Miss SMITH who has added many cards during the year, in the process of making an analysis of the volumes, a labor pursued as occasion admits in the intervals of her many and varied duties. Fifty-two volumes, two hundred and forty-three pamphlets and thirty-nine photographs have been added during the year.

In the work done in the Museum, in the general care and arrangement of the collections during the past year, I have been greatly assisted by Miss SMITH and Mr. CHICK, and in the cataloguing and preparation of the record of specimens received, by Mr. CARR and by Miss SMITH in whose handwriting nearly all of the entries in the catalogue have been made. Miss STUDLEY has also aided me in various ways in the Museum work.

Personally I have given considerable time to descriptive work relating to special collections in the Museum, and in working over the collections received preparatory to cataloguing and arranging them. Several days were given to picking out of the Museum collections the many objects relating to the methods of fishing among various nations. This was done at the request of Professor BAIRD for the use of Dr. RAU, in a memoir which he is preparing upon the subject. The specimens were sent to the SMITHSONIAN INSTITUTION and have been returned to the Museum. Three drawings of harpoonpoints from the shellheaps of Maine have also been made at the request of Dr. RAU, to whom also we have loaned several of our wood-cuts, for his Memoir.

At the request of Mr. W. H. HOLMES of the Smithsonian Institution, photographs, for his use in a forthcoming memoir, were made of a series of the shell ornaments from mounds and stone-graves, many of which were too fragile and too valuable to admit of sending to Washington.

A few wood-cuts were lent to the Rev. F. W. WRIGHT for illustrating his recent volume, for which also drawings of two of our paleolithic implements were made.

A small collection of objects from the Madisonville ashpits, and a few stone implements from the Southern States were sent to Mr. JOHN EVANS, of England.

In the last Report I mentioned a course of ten lectures, about to take place at the Museum. These were delivered in the months of February and March last, and were attended to the full capacity of the rooms in which they were given. As already mentioned, another special course was given during the past fall; besides these, lectures have been given to a class from the State Normal School at Framingham, to the scholars of two private schools from Boston, and to a party of the members of the Young Men's Christian Union who visited the Museum by appointment. Twenty-five free lectures were thus given at the Museum during the year 1882.

Mr. CARR has prepared during the year a paper on the social and political position of woman among the Huron-Iroquois tribes, which is offered for printing in this Report.

Miss STUDLEY has completed a paper descriptive of the human crania and bones found in the Mexican Caves by Dr. PALMER, which is also offered for publication.

Miss FLETCHER has prepared several papers relating to some of the ceremonies of the Sioux and Omaha Indians, for publication in the Museum Reports.

Dr. WHITNEY, Curator of the Museum of the Harvard Medical School, has continued his studies upon the pathological specimens in the Museum and will furnish a full account of them for publication in this or the next report.

Miss LINTON, Assistant in Chemistry at the Massachusetts Institute of Technology, has commenced a chemical study of human bones obtained from various sources, in order to ascertain if any changes take place which can be trusted as a means of indicating the antiquity of the skeletons. The materials for this interesting investigation are supplied by the Museum to which the results will be reported.

Dr. KINNICUTT, Assistant in the Harvard Chemical Laboratory, has made analyses of the metallic iron found in the altar mounds of the Little Miami Valley and will furnish a full report upon this important subject.

Numerous duties in the Museum and in the field have prevented the completion of a paper on American bronze which I hoped to have had ready for this report in continuation of the one on copper given in the preceding.

The wall-cases of the room to be devoted to the European col-

lections are nearly finished, and as soon as the long table-cases for this room are made it will receive the large and valuable collections from the Swiss Lakes, Denmark and other parts of Europe, which have so long been kept out of sight in drawers. Plans have been made for putting a number of cases in the galleries of the hall, which, I trust, will be carried out during the year. There will then remain to be cased the floor of the northern room of the second story, which, with the transfer of the cases now there to the osteological room on the upper floor, and the finishing of the wall-cases in the office, will complete the casing of all the available space in the present building. These additional cases, however, will not permit the exhibition of more than two-thirds of the collections now in the Museum. The work of eliminating and placing in drawers such objects as can be spared from the exhibition cases has been already begun. It will probably always be necessary to keep large portions of the collections in cabinet drawers, where the specimens can be had for comparison and study, however large the building may be in the future. Still it is to be hoped that the time is not distant when some liberal friend of science will provide the means for the erection of the next section of the building, so as to give room for the arrangement of the collections in proper systematic order.

The needs of the Museum are great, and while it is of the first importance to secure the means to continue the explorations in America while these are possible, there is no doubt but that a large addition to the regular income of the Museum funds is necessary in order to maintain the work it is performing at a standard commensurate with its importance.

Respectfully submitted,

F. W. PUTNAM,

Curator of the Museum.

PEABODY MUSEUM OF AMERICAN ARCHEOLOGY AND ETHNOLOGY,
Cambridge, Mass., February 17, 1883.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1882.

ADDITIONS TO THE MUSEUM.

26145 — 26224. Earthen whistles; human faces, birds, heads, spindle-whorls, stamps and vases in terra-cotta, from Teotihuacan, Mexico; obsidian scrapers, knives, arrowheads, flakes and cores with ornaments of the same material, probably earrings; human and animal forms carved in stone and shell; stone beads and celts; a carved stone representing a human face, and a hematite celt, from Cholula; human heads in pottery with fragments of vases and a piece of worked stone from the Pyramid of Cholula; copper celts from near Tlacolula; eight figures, human and animal, carved in stone, from Tulu between Merida and Progreso, Yucatan; carved stone turtle from Mayapan; flint spearpoint from Ticul; fragments of painted pottery from the Pyramid of Izamal; architectural ornaments of stone and fragments of earthen vases from Yucatan; cast of the calendar stone and specimens of the fibre made from the Maguay plant from the plateau of Mexico. — Collected and presented by Mr. ALEXANDER AGASSIZ.

26225. Fragment of steatite pot from North Eastham, Mass. — Collected and presented by Mr. GEO. A. PHILLIPS.

26226. Stone pestle, from Nahant. — Collected and presented by Mr. J. A. CARTWRIGHT.

26227. Painted feather fan, China. — Collected and presented by Mr. LEWIS C. FLANIGAN.

26228. Obsidian arrowhead, Suisun, Cal. — Collected and presented by Mr. ALEX. WILLIAMS.

26229 — 26242. Stone implements of different forms and uses from southwest Dakota, Shirley Basin, and Hat Creek, Wyoming Ter. — Collected and presented by Mr. S. GARMAN.

26243 — 26244. Human cranium and part of skeleton, with fragments of pottery, from a shellheap on Fort Island, Damariscotta River, Maine. — Collected and presented by Mr. A. T. GAMMAGE.

26245 — 26260. Stone celt, bone implement and harpoon points, from shellheap on Fort Island, Damariscotta River, Maine; fragments of pottery and broken stone implements and chips and flakes from different shellheaps near Damariscotta, Maine. — Collected and presented by Mr. HENRY T. HUSSEY.

26261 — 26275. Rude stone and quartz implements; fragments of pottery; quartz sinkers, a grooved stone, and worked pieces of hematite and

graphite from shellheaps, and on the surface near Sag Harbor, Long Island. — Collected and presented by Mr. WM. WALLACE TOOKER.

26276 — 26283. Rude implements and sinker of quartz and fragment of pottery from shellheaps near Sag Harbor; chipped quartz sinker, and a rude implement of the same material, probably a "teshoa," from Otter pond, near Sag Harbor; and a human cranium and lower jaw from near Fort Wayne, Indiana. — Collected and presented by Mr. WM. A. WHITE.

26284 — 26309. Human and animal heads in terra-cotta, earthen moulds, and arrowpoints and chips of obsidian and chalcedony from the fields around the pyramids of the Sun and Moon at San Juan Teotihuacan; stone celt and bead, with human heads and small cups in pottery from the fields around the ruins of Mita; grooved stone hammer from a field at the west base of Popocatepetl. — Collected and presented by Mr. F. A. OBER.

26310 — 26339. Broken stone ornament, hammer stones, points and rude and broken stone implements, some of them the "turtle-back" pattern, from Blackman's Point, Marshfield, Mass. — BY PURCHASE.

26340 — 26414. Stone celts, fragment of steatite pot, and stone pipe with carved face from Cullowhee, N. C.; semilunar stone knife from Bradford, Mass.; grooved stone axes from Cullowhee, N. C. and Andover, Mass.; stone knives from Cullowhee, N. C., Manchester, Mass., and different parts of the Ohio valley; stone points from North Carolina and different places in Massachusetts, Ohio, and West Virginia; fragments of pottery from Cullowhee, N. C., and Manchester, N. H., and a miscellaneous collection of stone implements from unknown localities in the United States. — BY PURCHASE.

26415 — 26465. Fragments of pottery, plain and ornamented; stone points of different patterns, with knives, scrapers, drills and flakes of the same material from Plattsburgh, New York. — Collected and presented by Dr. D. S. KELLOGG.

26466. Polished spearpoint of stone, from Plattsburgh, New York. — Collected and presented by Master ROBERT DOUGLASS KELLOGG.

26467. "Hennequin" sack and string, from Merida, Yucatan. — Collected and presented by Mr. ALEXANDER AGASSIZ.

26468. Specimens of "Kapa" cloth from the South Sea Islands. — Collected by Capt. THOMAS PRINCE and presented by the PEABODY ACADEMY of SCIENCE.

26469 — 26471. Bronze fish hooks from Lakes Bienne and Neuchatel. — BY PURCHASE.

26472 — 26478. Fish-hooks of shell and bone, latter with iron barbs; arrows with bone points, and a fish-hook with a whalebone line, from the northwest coast. — Collected by THOMAS MAYO, and presented by the MASSACHUSETTS HISTORICAL SOCIETY.

26479. Stone adze with handle, from New Guinea. — BY PURCHASE.

26480. Spearpoint of hammered copper, from Trenton, N. J. — Collected by FRANKLIN DE COU and presented by Dr. C. C. ABBOTT.

26481. Two boomerangs, from Gippsland, Victoria. — BY PURCHASE.

26482. Copper spearpoint, hammered, from Trenton, New Jersey.—Collected by FRANKLIN DE COU and presented by Dr. C. C. ABBOTT.

26483—26494. Architectural ornaments of stone from the ruins of Uxmal; lintel of wood, from Chichen Itza; modern water jars and vases of pottery, some of them painted, from Merida, Yucatan.—Collected and presented by Mr. ALEXANDER AGASSIZ.

26495—26505. Human head, bird-shaped whistle in terra-cotta, fragments of pottery, shell ornaments, a piece of bone which has been cut and burnt; plaster cast of earthen whistle, and human bones, from Cemetery Island near Progreso, Yucatan.—Presented by Messrs. ALEXANDER AGASSIZ, STEPHEN SALISBURY, JR., and QUINCY A. SHAW.

26506—26512. Fragments of pottery, some coarse, others painted and glazed, from the Cathedral yard in the City of Mexico; fragments of pottery painted and polished from the plain north of the City, between Mexico and Guadalupe Hidalgo.—Collected and presented by Mr. D. W. LORR.

26513. Vase of carved bamboo, from China.—Presented by Prof. C. E. MUNROE.

26514—26521. Quiver made of bamboo and hide; arrows with bone, wooden and iron points, some of them poisoned; iron spear, a sword and two "Kris," from Batavia.—Collected by Dr. D. F. G. VAN DE SANDE and presented by Mrs. B. PICKMAN MANN.

26522—26525. Brass arrowhead from Buttermilk Bay, Mass.; chipped implement of stone from North Truro, and a stone flake and implement from Chilmark, Martha's Vineyard.—Collected and presented by Mr. HENRY E. CHASE.

26526—26528. Human cranium and jaw and portions of crania and jaws, from the stone graves in Williamson Co., Tennessee. Exploration of the late E. CURTIS conducted for the Museum.

26529—26550. Human crania, fragments of pottery and casts of pipes from the site of the old town of Hochelaga, now the grounds of McGill College, Montreal.—Collected and presented by Dr. J. W. DAWSON.

26551—26558. Fragments of animal bones from a lake dwelling at Laibacher Moor; bracelet from the White Nile; and earthen jars and pots of the usual Missouri patterns, from mounds near New Madrid, Mo.—Presented by Mrs. S. B. SCHLESINGER.

26559—26577. Human, animal and bird heads in pottery, earthen disk and discoidal stones, from shellheap at the mouth of Bayou Coq d'Inde, Mobile Co., Alabama.—By PURCHASE. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

26578. Cast of the skull of Daniel Boone.—Presented by JOHN MASON BROWN.

26579. Temporal bone, with exostosis in ear, from a mound at Racine, Wis. Collected and presented by Dr. P. R. HAY.

26580. Stone arrowhead from Fairhaven, Mass.—Collected by Mr. HARRY E. GIFFORD and presented by the BOSTON SOCIETY OF NATURAL HISTORY.

26581—26586. Stone maul from the Bad Lands on Cheyenne River;

arrowheads and scrapers of stone and a scraper made of a piece of gun barrel, from southern Dakota.—Collected and presented by Mr. S. GARMAN.

26587—26969. Crania and human bones; earthen pots of different patterns, two of them with "salamander" handles; stone pipes; beads, pendants, finger rings and other objects made of copper; beads, points and scrapers of bone; cylinders and digging implements of antler; polishing, hammer and sharpening stones, stone celts, points and scrapers of flint; fragments of pottery; animal bones; and pieces of cut and worked coal, bone and antlers; from the Ancient Cemetery, near Madisonville, Ohio. This collection contains many hundreds of specimens from the leaf-mould in which the human skeletons are found and from the ashpits in the hard clay below them. Exploration conducted for the Museum by the CURATOR and Dr. METZ. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

26970—26987. Grooved stone axe and rude stone implements; fragments of pottery and pieces of worked coal; union shells, some of them perforated; broken stone ornament and unfinished pipe of the same material; animal bones and a piece of worked antler, charcoal and burnt stones, from the earth-circles on land belonging to Mr. Stiles, near the Ancient Cemetery, Madisonville, Ohio.—Explorations for the Museum conducted by the CURATOR and Dr. METZ. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

26988—26995. Human crania and other bones; and charred corn from the ashpits at Madisonville, Ohio.—Exploration conducted for the Museum by Dr. C. L. METZ and MATTHIAS BRITTON. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

26996—27054. Iron sword-hilt; hammerstones with and without pits, some of them grooved; mullers, celts and sharpening stones; drills, scrapers, knives, points, chips and broken implements of stone; animal bones and fragments of pottery, from the leaf-mould of the Ancient Cemetery at Madisonville, Ohio; hammerstones with and without pits; stone celts; broken pipe and ornaments also broken, all of stone; flint drills, knives, and points of different patterns, from various places in Ohio.—Collected and presented by Dr. C. L. METZ.

27055. Flint point from Madisonville, Ohio.—Collected and presented by Mr. DAVID RIGGLE.

27056—27062. Grooved stone axe, stone celts and a muller of the same material; broken stone gorget from Morrow, Ohio.—Collected and presented by Dr. J. T. COUDEN.

27063—27112. Hammerstones with and without pits; circular stones, some of them chipped; stone celts and mullers; points and scrapers of flint; shell beads, and pieces of cut and worked shell, bone and coal; fragments of pottery and bone points, from Sandy Ridge, Anderson Township, Ohio; flint chips and rude stone points; broken stone celt, piece of worked coal and fragments of pottery, from Fort Ancient, Ohio.—Exploration conducted for the Museum by the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

27113—27115. Fragments of pottery from Fort Ancient.—Collected and presented by Dr. J. T. COUDEN.

27116—27126. Grooved stone axes, stone celts, circular stones and chipped and broken flint points, from Turner's field, Anderson Township, Hamilton Co., Ohio.—Collected by Dr. C. L. METZ and F. W. PUTNAM; flint flake from the circle on the hill described by Col. Whittlesey; and human bones from a stone mound on Mr. Edwards' land in same township.—Exploration conducted for the Museum by the CURATOR and Dr. METZ. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

27127—27143. Chipped stone, burnt clay, fragments of pottery and flint points of different sizes and patterns, from Rock Creek, Moccasin Point, and Williams' Island, Tennessee.—Collected and presented by Gen. JOHN T. WILDER.

27144—27150. Pointed stone, probably natural form, from top of Green Mountain, Mt. Desert Island, Maine; stone pendant, stone points, and animal bones, from a shellheap at Manchester's Point, Mt. Desert Island.—Collected and presented by Miss HARRY A. HILL.

27151—27175. Charcoal, burnt clay, chipped stone, union shell, piece of antler and fragments of pottery, from a mound on the farm of John W. Hunt, near Brentwood, Williamson Co., Tenn.; flint cores, sharpening stone and potsherds, from the surface near the same mound; disks of stone and pottery, hammerstone, burnt clay, animal bones, some of them showing marks of fire, flint chips and an earthen dish and fragments of pottery from the remains of a log structure near Dr. W. H. Jarman's house, at Brentwood, Tenn.—Exploration conducted for the Museum by the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

27176—27408. Animal bones; stone disks, chips, celts and knives; charcoal and burnt clay and stone; shells and shell beads and spoons, and a carved "totem" of the same material; bone implements; pearl bead; piece of bark, and a number of earthen beads and bowls, dishes, bottles and cups of various forms and ornamentation, with many human crania and other human bones, from the stone-graves on Dr. W. H. Jarman's place near Brentwood, Tennessee; chipped stone points from the surface at the same place.—Exploration conducted for the Museum by the CURATOR.—Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

27409—27456. Hammer and sharpening stones; flint cores, and points of different sizes and patterns; stone drills and knives; disks of stone and pottery; human and animal heads and beads, also in pottery, and a clay ball, all from the surface, Brentwood, Tenn.—Collected and presented by Dr. W. H. JARMAN.

27457—27459. Broken stone hoe, a flint point and stone with pits on each side, from the surface, Brentwood, Tenn.—Collected and presented by Mr. JOHN F. HILL.

27460—27463. Stone celts and two grooved stone axes, from the surface, Brentwood, Tenn.—Collected and presented by Mr. W. H. CALLENDER.

27464—27481. Stone hoes and celts; discoidal stones and chipped implements; human head and small objects of unknown use in pottery, from the surface in Humphrey's Co., Tenn.—Exploration of the late E. CURTIS conducted for the Museum.

27482—27485. Buffalo head, painted, decorated pipe of catlinite, sticks used as pipe rests, scalp fastened on a wand, all used in the Sun dance of the Ogallala Sioux.—Collected and presented by Dr. V. T. MCGILLICUDDY.

27486—27650. Gift wands, each one representing a pony or other property; drum sticks, bone whistle, figures of horse, man and buffalo, cut out of raw hide, wooden skewers for perforating the flesh, and other implements that were used in the sun dance of the Ogallala Sioux, together with those numbered 27482—27485. Besides these articles there are a number of others, illustrative of the life and state of domestic arts among the Sioux, Omahas, Mandans, and other tribes. Among these are specimens of buckskin with bead and porcupine-quill ornamentation; paints, painting implements and a wooden pattern stick; dolls showing the styles of dress among different tribes; necklaces and garters of beads; domestic utensils of horn and wood; two stone disks, similar to many of those found in the Ohio valley, used by the Omahas to pound corn; stone pipes; flute made of cedar; articles of wearing apparel, including cloth belts, moccasins, and a skin dress; also a bow and iron-pointed arrows, and many other things. There were also a horse's skull, tin cup, small glass vial, horse's tail and streamer, and some other articles, from the surface of an Otoc grave that had been rifled; a model of a tent of the Omahas with all the articles belonging to it, including poles, pins, and models of grain sacks. A child's moccasins from Caughnawaga, Canada; and a medicine bag with its contents complete, once the property of a Yaukton Sioux.—Collected and presented by Miss ALICE C. FLETCHER.

27651—27839. Grooved stone axes; celts, hoes and pestles of the same material; hammer, polishing and sharpening stones; sinkers of different forms; flakes, scrapers, knives, drills and points in jasper and argillite of all the different New Jersey patterns from the surface; several palæolithics, some of them found *in situ* in the gravel, a human tooth from the grave; broken stone ornaments; brass beads, a perforated half-penny of 1688, and a stone pendant, all three found together; fragments of pottery and pieces of earthen pipes and pipe stems; and a number of rude, unfinished and broken implements of stone, from Trenton, New Jersey; worked stone, probably part of a mould and a stone bullet, from Gloucester Co., found by Mr. ROBINSON; two stone arrowheads, from County Antrim, Ireland, given to Dr. Abbott by Col. C. C. ABBOTT.—Explorations conducted for the Museum by Dr. C. C. ABBOTT.

27840—27845. Hammerstone, notched pebble, jasper drill and points from Trenton.—Collected and presented by Mr. RICHARD M. ABBOTT.

27846—28080. Bird-shaped and other ornaments of stone, and knives of the same material, from mounds in Butler Co., Ohio; ornamental axe, perforated, a stone celt and rubbing stone, from Kentucky; stone orna-

ments, points and drills, from Indiana; grooved axe, celt-gouge, points and a semilunar ornament, all of stone, from Massachusetts and Connecticut; and a large and varied assortment of stone implements and ornaments, of the characters usually found in the Ohio valley, from different places in Ohio. This collection is especially rich in articles of hematite, there being over thirty different celts of this material, besides a number of articles evidently intended for other uses.—**BY PURCHASE.** Received from the **SUBSCRIBERS TO THE RESEARCH FUND OF 1882.**

28081—28112. Knives, points, drills and scrapers of argillite, from Trenton, N. J.—Explorations conducted for the Museum by Dr. C. C. ABBOTT.

28113. Carved stone pipe, from a mound in the forks of the Holston and French Broad rivers, Tenn.—Collected by Mr. E. J. SANFORD and presented by Mr. WM. E. STONE.

28114—28149. Grooved stone axes, celts, and mullers, of the same material; broken stone ornaments and a collection of spearpoints, arrowheads, knives and scrapers all of flint, from a stone mound in the southern part of Stark Co., Ohio.—Collected and presented by Dr. A. P. L. PEASE.

28150—28186. Knives, spearpoints and arrowheads of different patterns, chiefly made of quartz, from Chester, South Carolina.—Collected and presented by Dr. S. E. BABCOCK.

28187—28291. Portraits of numerous Indians, many of them being the original paintings from which were made the plates published in the "History and Biography of the Indian Tribes of North America," by McKenney & Hall.—Presented by the HEIRS OF E. P. TILESTON and AMOS HOLLINGSWORTH.

28292. Portrait of O-ho-ka-pe, a Sioux hunter.—Painted by Capt. EASTMAN, and presented by HARVARD COLLEGE LIBRARY.

28293—28360. Human remains and animal bones; perforated shells and carved shell ornaments; points made of antler, with handles, gouge, and digging implements of the same; points, beads and scrapers of bone; cut pieces of coal; earthen pots, with fragments and ornaments of dishes; sharpening, rubbing, and hammerstones, polished stone celts, and flint scrapers, knives, drills and points; from the ashpits and leaf-mould over them, in the Ancient Cemetery near Madisonville, Ohio.—Collected by Mr. MATTHIAS BRITTEN, in the course of the Explorations conducted for the Museum by Dr. C. L. METZ.

28361—28369. Stone chips and arrowheads, from the surface, south of Miles Standish's Monument, Duxbury, Mass.; shells and a worked bone from a shellheap at Duxbury, Mass.—Collected and presented by Dr. J. R. CHADWICK.

28370—28372. Stone arrowheads and a knife of the same material from the Longfellow estate, Cambridge, Mass.—Collected and presented by Mr. ERNEST LONGFELLOW.

28373. Long oyster shells from bank of Charles River, Cambridge.—Collected and presented by Mr. T. W. B. CLARK.

28374. Eagle feather decorated. Given many years ago to the Hon. J. G. Palfrey by a Western Indian.—Presented by Miss PALFREY.

28375. Copper implement with semilunar blade from Mexico.—Presented by Dr. P. J. J. VALENTINI.

28376—28398. Human bones and flint points from a cave in Hart Co., Ky; shoes and strings, made from leaves of the cat-tail rush; piece of cloth woven from bark, bunches of string; braided grass; gourd vessels; shells of *Unio*, and a carved stone from Salt Cave, Ky.—BY PURCHASE.

28399—28450. Bamboo seat and poisoned dagger from the Caroline Islands; stone adze with wooden handle from Island of Samoa; stone adze from Fiji; shell bracelet and stone adze from Island of New Britain; stockings and a painting on cloth from Japan; braided mat from Hawaii; hat and mats made of palm, prepared betel, shell of *Placuna* used in place of window-glass; palm-pith for cleaning the teeth, from the Philippine Islands; vases, bowls, dishes, bottles, pitcher of earthenware; cocoanut cup and brush; bamboo basket, foot-ball, and sieve; wooden spoon, and shoes of the same material with leather tops; hats of palm leaf, all from Manila; cotton towel of native workmanship from Ilocos, north of Manila; braided cigar case, hat of buffalo horn, and a water-proof coat made of cocoanut fibre, all of native make, from Laguno or lake region of Manila; fishing float from Legaspe, Island of Luzon; bolo or knife with wooden sheath and earthen bowl, tea pot, pitcher and jug from Tobacco, Island of Luzon; knife and specimens of cloth and hemp fibre or twine from Iloilo, Island of Panay.—Collected and presented by Dr. SAMUEL KNEELAND.

28451—28460. Baskets made of bamboo, and of twigs, strippings and braid of the wild plantain, all Carib work, from Salibia, Island of Dominica.—Collected by Mr. S. W. GARMAN and presented by Mr. ALEX. AGASSIZ.

28461—28507. Thirty-two grooved stone hammers and ten grooved stone axes, from Rio Tesuque and Pueblo of Namba, New Mexico; club stone from Santa Fé, N. M; three rubbing stones from Rio Tesuque, New Mexico.—BY PURCHASE.

28508—28995. Obsidian chips, flakes, arrowheads, knives and an implement of unknown use; flakes and chips of chalcedony and moss agate; stone chips, points, and knives; grooved stone axes and hammers; metates and manos or grinding stones; a polishing stone and a door sill of stone; turquoises and copper ore; innumerable fragments of pottery, plain, colored and otherwise ornamented, from many different ruins of Pueblos in New Mexico.—Collected by Mr. AD. F. BANDELIER and presented by the ARCHEOLOGICAL INSTITUTE OF AMERICA.

28996—29036. Fragments of pottery, painted in different colors and otherwise ornamented; feet and legs of earthen dishes, and portions of clay images in human and animal forms; spindle whorls in pottery; obsidian chips; shells of *Unio* and oyster; shell ornament and teeth and bones of animals, from a mound near Tampico, Mexico.—Collected by E. H. WHORF, and presented by Dr. WALTER FAXON, Cambridge.

29037—29045. Hair of a Carib Girl from Island of St. Vincent; hair of a French creole Girl from Guadaloupe; pipe made by the negroes of St. Lucia; mass of obsidian from Reglia; painted gourd and brush made of fibres from Oaxaca, thread made from agave, model of a fire fan and

a toy dish from Puebla, Mexico.—Collected and presented by Mr. F. A. OBER.

29046. Stone beads from Chiriqui.—Collected and presented by WILLIAM NELSON.

29047. Large ceremonial implement made of Catlinite, obtained from an Indian near Redwood, Minnesota.—Collected and presented by Mr. W. HUDSON STEPHENS.

29048. Carved stone representing a turtle from Washington Borough, Penn.—Collected by G. W. CALLY, and presented by Dr. C. C. ABBOTT.

29049—29088. Fragments of pottery; animal bones, some of them showing marks of workmanship, stone scrapers, arrowheads, chips and hammerstones, from shellheaps on Damariscotta river and Muscongus Island; fragments of pottery and piece of a human bone from Tatman's Island in Damariscotta river; small cylinders of clay (natural forms) from the banks of Madomac river, Maine; and a hammerstone and pebbles from the surface near Damariscotta, Maine.—Collected by Mr. FELLOWS S. KNOWLTON, and presented by Mr. JAMES E. KNOWLTON.

29089. Cranium and portion of human skeleton, from the Great Oyster Heap, Newcastle, Maine.—Collected and presented by Mr. CHARLES METCALF, through Dr. R. C. CHAPMAN.

29090—29100. Shells of different kinds, fragments of pottery, a burnt stone, piece of charcoal and animal bones from the great shellheaps on the Damariscotta river, Me.—Exploration conducted for the Museum by the CURATOR. Received from SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

29101—29275. Hammer and whetstones, stone arrowheads, spearpoints, drills, knives, celts, chisel and scrapers, one of the latter being a new form; animal bones; points and handles of antler; arrowheads, harpoon points, and other implements of bone; numerous fragments of pottery, from shellheaps along the Damariscotta river and in that neighborhood; iron spearpoints, an iron axe and a clay pipe, all of European make, from a shellheap at Keene's Point, Maine.—Collected and presented by Mr. ALBERT J. PHELPS.

29276—20278. Bone harpoonpoint, and animal bones from a shellheap on Hodgdon's Island.—Collected and presented by Mr. ABRAM T. GAMMAGE.

29279—29300. Animal bones, stone chips and fragments of pottery from shellheaps at Smelt Brook, Damariscotta River.—Collected and presented by Mr. M. H. GAMMAGE.

29301—29475. Animal bones in great quantities; shells of different kinds, and specimens of broken shells, ashes and other materials of which the shellheap at Keene's Point is composed; carved bone and several bone points; a piece of worked antler; fragments of a large pot and numerous fragments of pottery; hammerstones, with scrapers, pestles, celts, points, chips and flakes of stone from different shellheaps on the lower part of the Damariscotta River, and on Muscongus Sound, Maine.—Collected by Messrs. A. J. PHELPS, A. T. GAMMAGE, S. L. CHAPMAN, EBEN PUTNAM,

and the CURATOR, in the course of an exploration conducted for the Museum by the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

29476—29521. Fragments of crania and other human bones; piece of burnt clay; flint chips, points and scrapers; fragments of pottery; red ochre, and animal bones, from mounds on Devil River, west shore of Lake Huron.—Collected by Mr. HENRY GILLMAN, and presented by Hon. STEPHEN SALISBURY.

29522—29523. An Idol and two paddles made by the Bush Negroes, Upper Surinam, Dutch Guiana.—Collected by Mr. JOHN H. ABBOTT. BY PURCHASE.

29524. Queue of a Chinaman. Presented by Mr. JOHN H. ABBOTT.

29525. Corn cobs from ancient ruined Pueblo, Kane Co., Utah.—Presented by Mr. E. A. BARBER.

29526. Human cranium from shellheap on Fort Island, Damariscotta river, Me.—Collected by Mr. A. T. GAMMAGE, and presented by Dr. R. C. CHAPMAN.

29527—30139. Human bones, animal bones, shells, burnt earth and clay, fossils, stone implements, copper implements, ornaments of copper and shells, terra-cotta jars and fragments of pottery, and various other things from the thirteen mounds forming the group on the land of Mr. Wm. Turner in the Little Miami Valley, Ohio. Several of the mounds of this group contained basins of burnt clay or "altars," two of which were cut out and brought to the museum. On two other altars were found thousands of relics, consisting of small pottery images, of a peculiar style of art, representing men and women, elaborately carved stone dishes, several pendants of stone made in a singular manner, beads made of stone; carved shells and bones, a pendant of buffalo-horn; over fifty thousand pearls, most of which are perforated; thousands of small shells perforated for use as beads, thousands of shell beads, and large numbers of perforated teeth of the wolf, black bear and grizzly bear; numerous ornaments of various shapes made of shell, several hundred bones from the feet of deer, the astragalus; a number of fossils, many water-worn stones of singular shapes, and water-worn or rounded pieces of soft coal. With these and hundreds of other objects were a large quantity of ornaments cut out of mica, some of them representing the heads of animals, and one a grotesque human head; also three large sheets of mica. There were also hundreds of ornaments made of native copper, including beads, scrolls, bands, circles, and various other shapes, ear-ornaments and pendants, besides several masses of native copper. A number of wooden beads were covered with thin pieces of copper, others with native silver. Several fragments of a thin piece of native gold were found which probably covered some other object. On one of the altars were several masses of meteoric iron with a number of ornaments made of the same metal. For a more extended account of this important collection, see the preceding pages.—Explorations of Dr. C. L.

METZ and the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

30140-30150. Shells, animal bones, fragments of pottery, pieces of mica, flint-flakes, charcoal and ashes, from the refuse pile in the centre of a stone covered mound on the south bank of the Little Miami River, near the group of mounds mentioned in the last paragraph.—Explorations of Dr. C. L. METZ and the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

30151-30158. Stone implements, flint points, burnt earth, charcoal, etc., from the Langdon mound, near Red Bank, Hamilton Co., Ohio.—Explorations of Dr. C. L. METZ and the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

30159-30161. Worked bone, flint flake, burnt earth with charcoal, and material from pits under a mound six feet high and sixty feet diameter, surrounded by an earth-circle one hundred and fifty feet in diameter, on the land of Mr. William Gould, near Reading, Hamilton Co., Ohio.—Explorations of Dr. C. L. METZ and the CURATOR. Received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882.

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ON THE SOCIAL AND POLITICAL POSITION OF WOMAN AMONG
THE HURON-IROQUOIS TRIBES.

By LUCIEN CARR, ASSISTANT CURATOR.

/ In studying the accounts that have come down to us of the manners and customs of the American Indians, their religion, form of government and material progress, we cannot but be struck with the similarity that prevailed everywhere, in early times, among the tribes that lived east of the Mississippi and south of the St. Lawrence and the great lakes. In fact, so alike were they in each and every one of these particulars that we are justified, notwithstanding certain linguistic differences, in accepting, almost without qualification, the statement of the old chronicler that whoever had seen one Indian had seen all. ⁽¹⁾ Of course this is but another way of saying that they had reached the same level of civilization, and although the assertion has met with some opposition, yet it is believed to be as true of the tribes that held this region two hundred years ago as it is of the white people who live here to-day. That there were certain differences, of more or less importance, in the domestic arts, and possibly in some of the customs of the various tribes is unquestionably true, just as it was true of individuals of the same tribe; but this no more presupposes a difference in the civilization of those tribes than the differences which are found to exist to-day, in the laws and occupations of manufacturing Rhode Island and agricultural Indiana imply a difference in the civilization of the people of those two states. To assert the contrary is to assert that skill or proficiency in some one of the mechanic arts, or a difference in some custom, as for

/ ¹ "If we have seen one American, we may be said to have seen them all, their color and make are so nearly the same." Ulloa quoted in Note XLV, Vol. I, Robertson's History of America: London, 1777. "Ils ont tous fongcièvements, les mêmes mœurs et usages, de même que la manière de parler et de penser; ayant les mêmes sentiments les uns que les autres;" Le Page du Pratz, Histoire de la Louisiane, Vol. III, p. 217: Paris, 1758. "C'est pourtant par-tout le même esprit de Gouvernement, le même génie pour les affaires, la même méthode pour les traiter, le même usage pour les Assemblées secrettes & solennelles, le même caractere dans leurs festins, dans leurs danses, & dans leurs divertissements;" Lafitau, Mœurs des Sauvages Ameriquains, Vol. I, p. 530: Paris, 1724. /

instance in some one of those relating to marriage or divorce, is a test of civilization; and this will scarcely be maintained in the face of the different, not to say contradictory, laws upon these very subjects that are now in force in different sections of our own country; nor will it accord with the fact that the Navajo women of to-day weave blankets which, in texture and coloration, compare favorably with the best products of modern looms. Unquestionably, proficiency in some one art, or the absence or prevalence of a certain custom, may, to some extent, measure the progress of a people in that particular direction; but as neither of these conditions necessarily implies a corresponding advance along any other line of development, they do not, either singly or when taken together, aid us very materially in fixing the place of a people in the scale of civilization. To do this with any degree of accuracy, we have to take into account all the different factors that enter into the mental, moral and material life of a people and see how far they exceed, or fall short of some level which, be it never so arbitrary, is for the time being assumed as the standard. Judged in this manner, these tribes will be found to hold a middle place between savagery and civilization, or if it be desired to go a step farther and define their position still more closely, we may, I think, justly claim for them a place in what Morgan terms the middle stage of barbarism and not in the lower, to which he has seen fit to relegate them². However, in matters of this kind, names count for very little; and this classification, useful as it undoubtedly is to the special student, can give but a very inadequate idea of the actual condition of a people. To supply this deficiency as far as may be consistent with the purposes of this investigation, it will be sufficient to say that these Indians lived in fixed villages and cultivated among other things both corn and tobacco. Slavery was more or less common among them and so, also, in some shape was the worship of the sun.³ Ostensibly they were governed, so far as they submitted to any form of government, by a council of chiefs and elders, whose authority, however, extended no farther than their power to persuade and was, as we shall see later on, shared by, if it did not ultimately reside wholly in, the women of

² Ancient Society, p. 16: New York, 1877.

³ The reader is referred to a paper entitled "The Mounds of the Mississippi Valley, historically considered," in Vol. II, of the Memoirs of the Kentucky Geological survey, in which I have discussed these matters at some length.

the tribe. In the manufacture of implements and weapons they had reached what is known as the stage of polished stone, that being the material usually employed, though bone and horn were also used. Of the art of reducing ore they appear to have been entirely ignorant, and the articles — chiefly ornaments — of copper, with here and there one of silver or gold, found among them were made of the native material simply hammered into shape.⁴ With the manufacture of pottery however, they were well acquainted and their pots are said to have been well made and of different sizes, "some being large enough to hold ten gallons." They also had "large pitchers to carry water; bowls, dishes, platters, basons and a prodigious number of other vessels of such antiquated forms as would be tedious to describe and impossible to name."⁵

This is, in brief, a somewhat fragmentary account of the condition of the tribes east of the Mississippi at the date of the discovery, and however imperfect it may be, it is believed to be substantially accurate as far as it goes. To this extent, then, it furnishes data for a correct estimate of the advance made by these peoples, along some of the different lines over which it is necessary to pass in the progress from savagery to civilization; and though it is confessedly incomplete in that it fails to indicate the precise point which each tribe had reached on each and every separate path, yet it is sufficiently explicit and comprehensive to enable us to say, with certainty, that they were moving on the same or rather parallel lines; and also, in a general way it justifies the conclusion that they had attained to about the same stage of social organization and material development.

⁴ It is possible that the native copper may in some cases have been melted before it was thus hammered. Champlain (*Voyages*, Vol. II, p. 236: Boston, 1878) was told that the Indians gathered copper in lumps and "having melted it, spread it in sheets, smoothing it with stones," and the Knight of Elvas (*Hist. Coll. Louisiana Part II*, p. 149) says that De Soto heard of a province to the north, named Chisca, where "there was a melting of copper, and of another metal of the same color, save that it was finer, and of a far more perfect color, and far better to the sight; and that they used it not so much because it was softer." In Hakluyt's *voyages*, III, pp. 315 and 317, Ralph Lane tells us that though "this mineral be but copper, seeing the Sanages are able to melt it, it is one of the richest minerals in the world." Harriot in Hakluyt's *voyages*, III, p. 327, speaks of ornaments of silver, "grossly beaten;" and in pp. 67 and 132 of Strachey's *Virginia* (*Publications of Hakluyt Society: London, 1849*) we are told of ornaments of beaten copper. Nearly all the old writers speak of the abundance of copper ornaments among the Indians.

⁵ Adair, *History of the North American Indians*, pp. 421 and 424: London, 1775.

This is a matter of some importance in studying the condition of our Indian tribes, and in the course of the present investigation it will be found to come to the surface quite frequently, for the reason that, in many instances, it is not possible to prove that a certain rite or custom prevailed among any particular people by the direct testimony of competent witnesses. Our accounts, even of the tribes that are best known to us, are so often wanting in details that we are obliged to resort to the inferential method in order to get any idea of their institutions. This is unfortunate, but it is unavoidable; and though this mode of investigation may, at times, be somewhat unsatisfactory, yet it would be a grave mistake to suppose that conclusions, reached by this process, are always deficient in logical force. So far is this from being the case that, not unfrequently, they are as binding and necessary as is the sequence of cause and effect in the daily concerns of life. Especially is this true of those institutions that depend upon each other for their existence, or which have grown, one from another. As an instance of this, let us take a people of whose social organization we know nothing except that they were divided into gentes, and see how far it is possible to understand their marriage laws. At first sight, this foundation would appear to be too slight to justify its use as a basis for reconstructing a whole network of customs, and yet so inseparably is this manner of dividing a tribe connected with certain restrictions upon the limits within which marriage might take place, that the one being granted the other may be assumed as a matter of course. Of a precisely similar character were many of the institutions that entered into the social and political organization of our American Indians. Almost without exception they will be found to have flowed from the division of the tribe into gentes, though the direction seems to have been given to the stream by the no less important fact that, as a rule, descent and inheritance were transmitted through the female line.

Thus upon the death of a chief whose office was hereditary, as was the case with the Iroquois sachems, he was succeeded not by his son, but by the "son of a sister or of an aunt or niece on the maternal side;"⁶ and as his property, at least all of it that was

⁶ Lafitau, *Moeurs des Sauvages Amériquains*, Vol. I, p. 471: Paris 1724. Morgan, *Ancient Society*, Part II, Chap. II, treats this subject very fully. He places the order of descent "from brother to brother or from uncle to nephew." The same rule prevailed in Virginia according to Strachey, *l. c.* p. 70, and Hawkins tells us that among the Creeks on the death of a Mico "if his nephews are fit for the office, one of them takes his place as his successor; if they are unfit one is chosen of the next of kin, the descent being always in the female line;" *Sketch of the Creek country*, p. 69.

not buried with him, was hereditary in his gens, it fell to the same parties and could not descend to his child for the reason that, by their peculiar laws of marriage, a child⁷ and its father must necessarily belong to different gentes. This mode of reckoning descent was very general among our American Indians, and it is important to have this in mind when investigating their customs, as it is believed to furnish the key to the study of their whole social organization. "In fact there is no other way of accounting for many of their institutions, and notably for that singular phase of society in which woman, by virtue of her functions as wife and mother, exercised an influence but little short of despotic, not only in the wigwam but also around the council fire. Even among the Iroquois, those fierce and haughty warriors, who swept as with the besom of destruction, from the Atlantic to the Mississippi and from the St. Lawrence to the Cumberland, her influence was absolutely paramount.⁸ Chiefs, warriors and councils were all obliged to yield to her demands when authoritatively expressed; and there are few scenes in Indian story more dramatic, than those in which the eloquent Red Jacket, and that magnificent half-breed, Corn-planter, were constrained to do her behests in the face of their repeated declarations to the contrary. This is perhaps a somewhat startling assertion to be made in reference to the most warlike of all our American tribes, and yet a moment's reflection will convince us that it ought not to occasion any surprise, since the condition it describes is believed to be the legitimate outcome of that state of affairs in which, to use a common expression, the woman carried the gens.⁹ Bear in mind that among them the gens or clan, with its privileges and obligations, was, in reality, nothing but a brotherhood of individuals bound together by ties of blood, and it will at once be seen why woman, through whom, alone, this bond of union could be

⁷ "Children took nothing from the father, but they inherited their mother's effects." *Ancient Society*, p. 153. Les enfants . . . sont censez de la cabane et de la famille de la femme, et non point de celle du mari. Les biens du mari ne vont point à la cabane de la femme à laquelle il est étranger lui-même; et dans la cabane de la femme, les filles sont censées héritières par preference aux mâles parce que ceux-ci n'y ont jamais que leur subsistence." *Lafitau*, Vol. I. p. 73: Paris, 1724.

⁸ "Rien n'est cependant plus réel que cette supériorité des femmes." *Lafitau*, Vol. I, p. 71. "Car outre cette Gynécocratie, qui est absolument la même que celle des Lyéiens, et où le soin des affaires n'est entre les mains des hommes, que comme par voye de procuration, etc." *Ibid*, p. 463.

⁹ "La succession au Trône dans la ligne collatérale maternelle des neveux aux oncles, préférablement à la ligne directe des enfans aux peres était une suite de cette Gynécocratie ou Empire des femmes." *Lafitau*, Vol. I. p. 80.

preserved and perpetuated, should have been accorded a prominence which can scarcely be paralleled outside of the realms of fable. However, this is a point on which it is needless to insist, as it is with the existence of this phase of social organization that we are concerned rather than with the theory of its origin. To this end, then, it behooves us to look somewhat carefully into evidence upon which the statement rests; and this, thanks to the writings of the Jesuit Fathers and the later researches of Morgan and others, is comparatively an easy task.

That the Indian woman was not the overworked drudge she is usually represented to have been, has been shown in the course of an investigation I have, elsewhere, had occasion to make into the agricultural habits of our tribes;¹⁰ and it is, therefore, unnecessary, in this connection, to do more than refer to that paper and to give a qualified approval to the statement of Mary Jemison, who passed her life among the Iroquois and who tells us that the task of an Indian woman was not harder than that of her white sister, while her cares "were not half as numerous nor as great."¹¹ Certainly, if her duties be compared with those that generally fell to the share of the wives and daughters of our early pioneers, her lot cannot, in any sense, be regarded as exceptionally hard. Indeed, on *a priori* grounds, it is scarcely possible that it could have been so, since she possessed and used the right of divorce¹² equally with her husband; and it would be too great a tax upon our credulity to ask us to believe that she would have submitted to any very unequal distribution of the labor necessary to the support of the family, when she held the remedy for such an injustice in her own hands. But it is not of this phase of Indian life that I propose to speak, though it has an evident bearing upon my subject and has been very generally overlooked. Neither do I intend to refer, except incidentally, to those cases in which individual women have risen to rank and influence in their respective tribes by the possession of superior abilities, greater riches,¹³ or by the

¹⁰ Mounds of the Mississippi Valley, historically considered" in Vol. II, of the Memoirs of the Kentucky Geological Survey.

¹¹ Life of Mary Jemison, p. 70: New York, 1856.

¹² "Amongst the Iroquois and Hurons they may part by mutual consent," Charlevoix. Letters, Vol. II, p. 50: London, 1761. "The right of voluntary separation was allowed to all:" Morgan, League of the Iroquois, p. 324. Compare Lafitau, Moeurs des Sauvages Amériquains, Vol. I, pp. 581, *et seq.*: Paris, 1724. Hawkins' Sketch of the Creek Country, p. 73. Adair, p. 139. Bartram, p. 515.

¹³ The curious in such matters may refer to Drake's Indians of North America (chap. IV: fifteenth edition) for an account of the women who were conspicuous in

ostentatious display of those peculiar powers that have made the name of Messalina forever infamous. Such instances are not uncommon, and they are not confined to any particular family of tribes; but except in so far as they show that, among our American Indians, there was no insuperable barrier to the acquisition of the highest tribal authority by a woman, they do not come within the pale of this investigation. For reasons that have been given, this field has been necessarily limited, and, for the present, my observations, except when the contrary is clearly indicated, will be confined to the tribes that belonged to the Huron-Iroquois family,¹⁴ and to those customs which, springing from institutions that were generally prevalent east of the Mississippi, may be safely predicated of all the tribes, within that area, which can be shown to have reached the same stage of development, and in which the conditions necessary for the growth of these customs are known to have existed. As an instance of this method of procedure, let us recur to our illustration of a people of whom we know nothing save that they were divided into gentes, and add to it the additional facts that descent among them was in the female line, and that their highest expression of tribal authority was to be found in a council of chiefs and elders. In this sequence of institutions may be seen the two extremes of a singular phase of social and political organization; and with this fact clearly understood, it is believed to be perfectly legitimate to infer that in any tribe of which the two can be predicated, the intermediate stages, connected as they must have been like the rounds of a ladder, did not differ from those that are known to have existed among the Iroquois, among whom the ideas peculiar to this stage of development had crystallized into a definite form. Regarded,

King Philip's war. See also St. Cosme, in *Sea's Early Voyages* (p. 63: Albany, 1861), for an account of a woman among the Illinois, who was very influential on account of her talent and liberality, and because "having many sons and sons-in-law, all hunters, she often gives banquets," etc. Carver (*Travels*, pp. 41, 245 and 259: London, 1781) speaks of women who were chiefs among the Saukies, Dakotas and Winnebagoes. In the latter instance, however, descent being in the female line, she is said to have inherited the position. Besides these, we have the "Caciquess of Cofachiqui" mentioned repeatedly by the chroniclers of De Soto's expedition; the queen of Tuckabatchee (Creek) who proposed marriage to Hawkins; the Squaw sachems of New England, who were found so useful whenever the whites wanted to buy land, etc., etc.

¹⁴ Speaking of these tribes, Lafitau, Vol. I, p. 463, says: "On voit dans chacun la même distribution des familles, les mêmes Loix de police, le même ordre; en sorte que qui en voit un les voit tous." In the first volume of the *Publications of the Bureau of Ethnology*, Washington, 1881, Major Powell gives an account of the social and political organization of the Wyandots, a Huron tribe, to which the reader is referred.

then, from this point of view, a study of the customs of this family of tribes possesses an added interest, since it not only offers a field for investigating a phase of civilization of which it is, perhaps, the best exemplar, but it supplies, at the same time, the necessary material for filling in the picture of the social and political institutions of tribes of whose organization we have nothing but the outline sketch.

Before, however, entering upon this branch of my subject, it may be well to premise that in the course of this investigation the two primary facts of the division of our American tribes into gentes, with descent in the female line will be taken for granted. Morgan¹⁵ has gone into these subjects very thoroughly, and though there may be instances, as among the Ojibwas, in which the rule of descent had been transferred to the male line, yet it is very evident from what Schoolcraft¹⁶ has told us of customs that existed in this tribe, even in his day, that this change had taken place in the not very distant past. Be this as it may, there can be no doubt that in the Huron-Iroquois family of tribes, as well as among those that lived south of the Ohio, the older form of descent prevailed; and even among the Algonquins of the north it was the exception to find a people among whom it had been changed. Assuming then these two fundamental facts, we are prepared to examine the accounts that have come down to us of the organization of the Iroquois and incidentally of the other American tribes, in order to find out exactly what the old chroniclers tell us of the social and political position held by the women.

Beginning with the domestic side of the question, as being the first in time as well as in importance, it will be found that everywhere east of the Mississippi and south of the great lakes, our American Indians, at the date of the discovery, lived in what for the want of a better name, may be termed barrack-houses.¹⁷ Among the Iroquois, these houses were long, narrow cabins of bark, with a passage way through the centre; and along this, on each side, were arranged a series of compartments, each one of which was allotted to a family. These houses varied in size, being from

¹⁵ *Ancient Society*, Chap. VI: New York, 1877.

¹⁶ *Indian in his Wigwam*: New York, 1848.

¹⁷ Lafitau, Vol. II, p. 10. Van der Donck, *New Netherlands*, in Vol. I, Coll. N. Y. Hist. Soc., p. 197. Joutel, *Journal* in Part I, Hist. Coll. of Louisiana, p. 148. La Vega, *Conquête de la Floride*, Part I, p. 103, and Part II, p. 19: Paris, 1709. Lawson, *Carolina*, p. 177: London, 1718.

twenty to thirty feet wide, and of a length proportionate to the number of families that were to be accommodated. / Each household was made up on the principle of kin, *i. e.*, the married women being usually sisters, own or collateral, were members of one and the same gens to which of course, their children also belonged. / The husbands, however, as also the wives of the sons, when the latter were brought to the cabin (which seems to have been but seldom), would necessarily be of different gentes, since marriage within the gens, even in cases of adoption, was never allowed. / Over every such household a matron presided, whose duty it was to supervise its domestic economy. After the single daily meal had been cooked at the different fires within the house, it was her province to divide the food, from the kettle, to the several families according to their respective needs. What remained was placed in the custody of another person until she again required it. / Within the house, all the stores seem to have been in common, and "whatever was gained by any member on hunting or fishing expeditions, or was raised by cultivation" was added to the general stock. This is, substantially, Morgan's¹⁸ account of the interior arrangements of an Iroquois "long house," and from the system of descent and consanguinity that prevailed among them, it is obvious that a majority of the inmates of such a household must have belonged to one and the same gens—that of the mothers. This preponderance would be increased and perpetuated by the fact that a young woman upon her marriage, did not leave her home,¹⁹ but brought her husband into it; and so long as he remained in the cabin, and even after the young couple had gone to live with his relations or had a home of their own, he was obliged to give either the whole or a part of the game that he killed and the fish that he caught, to his mother-in-law.²⁰ If he proved

¹⁸ Morgan, *House and House-life of the American Aborigines*, being Vol. IV of the *Contributions to North American Ethnology*, p. 64: Washington, 1881.

¹⁹ "Chez nos Sauvages les femmes sont maîtresses, et ne sortent point de chez elles." Lafitan, I, p. 568. Perrot, p. 30: Paris, 1864.

²⁰ Charlevoix, *Letters* II, p. 51: London, 1761. Lafitan, I, p. 579, tells us that "toute sa chasse appartient de droit à la cabane de son épouse, la première année de son Mariage. Les années suivantes il est obligé de partager avec elle." See also Morgan, in *House-life of the American Aborigines*, p. 64. Perrot (*Mœurs des Sauvages de l'Amérique*, p. 25: Paris, 1864) says the same custom existed among the Algonquin tribes of the north and south. According to him, the young couple for the first two years after their marriage lived with the mother of the wife, and during that time it was the husband's duty to carry everything that he gained, either by hunting or fishing, home to her. Of this she gave him a part for his own mother. At the end of two

lazy and failed to do his share of the providing, "woe be to him. No matter how many children, or whatever goods he might have in the house, he might at any time be ordered to pick up his blanket and budge; and after such orders it would not be healthful for him to disobey; the house would be too hot for him; and unless saved by the intercession of some aunt or grandmother, he must retreat to his own clan, or as was often done go and start a new matrimonial alliance in some other . . . [The female portion ruled the house, and were doubtless clamish enough about it.]"²¹

When a young couple felt brave enough to leave the maternal roof and "set up for themselves, the husband had to make a matress for his wife, and build her a cabin or repair the one in which they were to live."²² It was also a point of honor with him to see that his wife and children were well fed and well clothed.²³ Of this cabin the wife was the absolute mistress;²⁴ and not only was this true of the cabin and all that it contained, but she seems also to have owned the fields and the harvests. In fact, we are told that the whole of the land occupied by the tribe belonged to her.²⁵

years, he went with his wife to live with his mother "et quand il revient de la chasse ou de la pêche, sa belle-mère lui donne une partie de ce qu'il a porté pour sa mère. S'il revient de traite pareillement, c'est toujours aux volontés de sa belle-mère qu'il doit avoir égard." Among the Sacs, Foxes, and Kickapoos, the young husband served his wife's parents "faithfully according to custom, which is till she has a child; after which he can take her to his own relations, or live with those of his wife. During the servitude of a young Indian, neither he nor his wife has anything at their disposal: he is to hunt, and that in the most industrious manner; his wife is continually at work, dressing skins, making mats, planting corn, etc. . . . Among the Chippewas, Ottawas, and Potawatamies, a wife is sometimes purchased by the parents of the young man, when she becomes at once his own property; but the most common mode of procuring a wife in all these nations is by servitude." Morse Report, Appendix, p. 131. Among the Indians on the Gulf coast we are told that "From the time a daughter marries, all that he who takes her to wife kills in hunting or catches in fishing, the woman brings to the house of her father, without daring to eat or take any part of it and thence victuals are taken to the husband." Cabeza de Vaca, p. 76, translated by Buckingham Smith: New York, 1871.

²¹ Rev. Ashur Wright, quoted in Morgan, *House and House-life of the American Aborigines*, p. 64.

²² Charlevoix, *Letters*, Vol. II, p. 54.

²³ Lafitau, Vol. I, p. 579: Paris, 1721.

²⁴ See above, Note 19, and also Charlevoix, *Letters*, Vol. II, p. 54. "The wigwam or lodge, and all articles of the household belong to the woman—the head of the household—and at her death are inherited by her eldest daughter, or nearest of female kin." Powell, *Short study of Tribal Society among the Wyandots*, *l. c.*, p. 65: Washington, 1881.

²⁵ "C'est en elles que réside toute l'autorité réelle: le païs, les champs et toute leur récolte leur appartiennent." Lafitau, I, p. 72. "The women councillors partition the gentile land among the householders and the household tracts are distinctly marked by them." Powell, *l. c.*, p. 65.

This statement is made without the least qualification by the author from whom I quote, and as an evidence of its truth we find that it was distinctly asserted at a council held in 1791. At that council, the women told Col. Proctor, the American Commissioner, " . . . you ought to hear and listen to what we, women, shall speak, as well as the sachems; *for we are the owners of this land* — and it is ours. It is we that plant it for our and their use. Hear us, therefore, for we speak of things that concern us and our children, and you must not think hard of us while our men shall say more to you; for we have told them." This statement, as to the ownership of the land, was not denied, and on the re-opening of the council, Red Jacket, through whose instrumentality it had, at a previous session, been most unceremoniously closed, was made spokesman for the women, and in that capacity was obliged to yield to demands which he had previously bitterly opposed. This he did in the following emphatic language: " Now, listen, Brother: you know what we have been doing so long, and what trouble we have been at; and you know that it has been the request of our head warrior (Cornplanter) that we are left to answer for our women, who are to conclude what ought to be done by both sachems and warriors. So hear what is their conclusion." " Brother: the business you have come on is very troublesome, and we have been a long time considering on it, ever since you came here, and now the elders of our women considering the greatness of your business, have said that our sachems and warriors must help you over your difficulties for the good of them and their children." ²⁶ From the above extracts it will be seen, that the claim of the women was made under the most solemn circumstances, and in the most positive manner — there is no possibility of mistaking it — and as it was not disputed, we are justified in inferring that it was recognized as valid by those who took part in the council. It is true that there was no mention, at this time, of a sale of land, and that hence, under the circumstances, the assertion of this right of ownership by the women, may seem like a work of supererogation, or a mere rhetorical flourish unworthy of serious consideration. Such, however, can hardly have been the case, for some years later, at a council held in 1797, this very question did come up, and the women, having received a number of presents from Mr. Morris," are said to have fallen back

²⁶ Stone, *Life of Red Jacket*, pp. 155 *et seq.* Albany, 1866.

on their reserved rights," and in conjunction with the warriors, to have obliged the chiefs to reopen a council that had been declared closed, and to make a sale of lands upon terms which had been previously rejected. / Upon this occasion, Cornplanter seems to have been selected as their spokesman, for in reopening the deliberations, he said, among other things, "that the women and warriors had seen with regret the misconduct of their sachems;" and Farmer's Brother, himself a chief, was constrained to admit that the course of the women and warriors, in thus nullifying the proceedings of a council, "was in perfect accordance with their customs."²⁷ These two instances—in one of which the women assert, without contradiction, that they owned the land, and in the other they take a negotiation out of the hands of a council, and in conjunction with the warriors, oblige the chiefs against their wishes, actually to sell a part of that land—if they do not confirm the statement of the old chronicler in every detail, at least justify us in concluding that, either wholly or in part, the land belonged to the women. / Upon this point Morgan is very clear; and though it is evident from what he says that the claim of the women to exclusive ownership cannot be sustained, yet it is equally evident that their proprietary rights in the land were not less extensive nor less well defined than were those of the men. According to him the title was vested in all the people of the tribe,²⁸ including of course females as well as males; and of this there cannot be much doubt in view of the many deeds, receipts, and other official documents that have come down to us, bearing the signatures, conjointly, of the principal women, the chiefs and the leading warriors.²⁹ /

As the women appear thus far to have owned everything in the shape of private property except the clothes worn by the men, and their weapons, it will not surprise us to learn that "the children belonged entirely to the mother and acknowledged no authority but hers."³⁰ / Charlevoix does, it is true, in a spirit of consolation, volunteer the information that the man "if not looked upon as the father was at least respected as the master of the cabin," but unfortunately he has to admit, at the same time, that he did not know how far this custom prevailed; and that his doubts in this respect were well founded, is evident from what we know of the practice of

²⁷ *Life and Times of Red Jacket*, pp. 213, *et seq.*

²⁸ Morgan, *League of the Iroquois*, p. 326: Rochester, 1851.

²⁹ W. L. Stone, *Life of Brant*. Vol. I, pp. 62 and 499, and Vol. II, p. 575: Albany, 1865.

³⁰ Charlevoix, *Letters*, Vol. II, p. 53.

neighboring tribes³¹ as well as of the Iroquois themselves. Notwithstanding the disadvantage, to call it by no stronger name, under which the man labored, it appears that sometimes, in cases of divorce after children had been born to the parties, the fathers did lay claim to the sons. On general principles this would seem to have been a very fair division of the children and with our ideas of right and wrong, it is difficult to understand upon what grounds this act of justice was refused; and yet we are told that the women never allowed the claim and did not hesitate to defeat it whenever made. The children, too, having grown up under the wing of the mother generally took her side in the quarrel and resented the affront which their father, by his desertion, had put upon them not less than upon her³².

In the matter of marriage, their customs were very simple. Except that it could not take place between members of the same gens, there does not seem to have been any restrictions upon it. The matrons of the cabins took the affair in hand, and all the arrangements were made upon the basis of interest.³³ The young people did not have much to say in the matter; in fact so little were their tastes consulted,³⁴ that individuals were sometimes united in this relation without their knowledge or consent, and perhaps without even a previous acquaintance.³⁵ It was not, however, customary for the relations of a young woman to make the first advances, "unless she remained too long in the market when her family would act underhand in order to get her disposed of, but in this a great deal of caution was used."³⁶ This backward-

³¹ Thus among the Ojibwas, among whom descent had been transferred to the male line, we are told that "The lodge itself with all its arrangements is the precinct of the rule and government of the wife. She assigns to each member his or her ordinary place to sleep and put their effects. These places are permanent and only changed at her will: . . . Husband has no voice in the matter: . . . In the lodge the man may be looked upon as the guest of his wife:" Schoolcraft, *Indian in his Wigwam*, pp. 73 and 77: New York, 1848. "Among the Wyandots the head of the family is a woman:" Powell, *l. c.* p. 59.

³² Lafitau, Vol. I, p. 569, Paris, 1724. "The children were of the tribe of their mother. No right in the father to the custody of their persons, or to their nurture was recognized. As after separation he gave himself no further trouble concerning them, . . . they became estranged as well as separated:" League of the Iroquois, p. 325. "Children irrespective of sex, belong to the gens of the mother:" Powell, *Study of Wyandots*, p. 63. For the prevalence of the same custom among other tribes see Lawton, *Carolina*, p. 185; Timberlake, *memoir concerning the Cherokees*, p. 66; Bartram's *Travels through Florida*, p. 515; *Archæologia Americana*, p. 285.

³³ Lafitau, Vol. I, p. 561.

³⁴ Lafitau, I, pp. 561, 565, League of the Iroquois, pp. 321, *et seq.*

³⁵ League of the Iroquois, p. 323.

³⁶ Charlevoix, *Le tiers II*, p. 51.

ness, among a people as natural in their manners as were the Indians, is a little strange, since it must have been an object with them to marry off their girls as early as possible, in order to increase the strength and prosperity of the gens by the addition of their husbands to its working force of hunters.³⁷ A partial explanation, however, of this seeming inconsistency can be found in the fact that the matrons or women who presided over the different households were great match-makers, and they never failed to advise a young man to marry, even though they knew, that from the time that he did so, his services in the chase, etc., would no longer belong to them, but would appertain to the gens of his wife.³⁸ In spite, however, of the manifest advantage that would accrue to their families, the young women "do not seem to have been in any hurry to get themselves married," though this reluctance may have arisen from the fact that "in some places they were at full liberty to make trial of that state beforehand, and the ceremony of marriage made no change in their condition except to render it harder."³⁹ As a rule, however, it was not an affair in which they were allowed much choice, as the old women usually arranged the matter to suit themselves. Thus we are told that when a "matron" had a son or other male relative whom she wished to see married she looked about for a young woman "of good repute, laborious and possessed of a good temper;"⁴⁰ and when she thought she had found such a person, she proposed the matter to the girl's friends, and after due deliberation and the exchange of a few presents the affair was settled. Everything was conducted in the most decorous manner, not only during the preliminary arrangements, but at the marriage and even afterwards. Indeed so incredible are some of the stories told of their modest reserve, that Charlevoix, who is not ordinarily very sceptical on such subjects, feels constrained to intimate a doubt of their truth.

Polygamy or rather polygyny was never permitted among the Iroquois and according to Morgan it never became a practice,⁴¹ though Charlevoix speaks of "nations that had wives in every quarter where they had occasion to sojourn for a while in hunting

³⁷ Lafitau, II, p. 163.

³⁸ Lafitau, I, pp. 562, 563.

³⁹ Charlevoix, Letters, Vol. II, p. 51. Compare La Hontan, Voyages, Vol. II, pp. 34 *et seq.*: London, 1703.

⁴⁰ Lafitau, Vol. I, p. 564.

⁴¹ League of the Iroquois, p. 324. Lafitau, Vol. I, p. 555.

time," and tells us that "this abuse had crept in some time since among the nations of the Huron language who had always before been satisfied with one wife.⁴²" This moderation, in view of the very different practice in neighboring tribes, speaks well for the Iroquois men. I am sorry, however, to say that the virtue was not imitated by the women, as they allowed themselves a plurality of husbands, at least among the Tsonnontouans (Senecas); and this the old writer thinks "was very singular and was the result of the gynecocracy that existed among them."⁴³

Having married off the young people and started them to housekeeping, it would seem as if the duties of the matrons ought, so far as this particular couple were concerned, to have been about over. Such, however, was not the case, for now they had to see that the newly married pair got along together harmoniously. "If differences arose between them, it became the duty of the old people to effect a reconciliation, and by advice and counsel to guard against a repetition of the difficulty. But if disturbances continued to follow reconciliations, and their dispositions were found to be too incongruous for domestic peace a separation followed, either by mutual consent or the absolute refusal of one of the parties longer to recognize the marriage relation."⁴⁴ In early times such ruptures were considered disreputable and were therefore unfrequent,⁴⁵ but later on "the inviolability of the nuptial contract was less sacredly regarded, and the most frivolous reasons, or the caprice of a moment, were sufficient for breaking the marriage tie."⁴⁶ However, even in early times, divorces did sometimes take place in families as well regulated as those of the Iroquois seem to have been, and from the accounts of the old

⁴² Charlevoix, Letters, Vol. II, p. 48.

⁴³ "Ce qui paroitra plus singulier, c'est que, par une suite de la ginéocratie, la Polygamie, qui n'est pas permise aux hommes, l'est pourtant aux femmes chez les Iroquois Tsonnontouans, où il en est, lesquelles ont deux maris légitime; Laftan. I. p. 555. Among the Natchez, "the daughters of a noble family are allowed to marry none but private men; but they have a right to turn away their husbands when they think proper, and marry another, provided there is no alliance between them. If their husbands are unfaithful to them, they may cause them to be put to death, but are not subject to the same law themselves; but on the contrary may entertain as many gallants as they please, without the husband's daring to take it amiss. . . . He stands in a respectful posture, in the presence of his wife, never eats with her, salutes her in the same manner as the rest of her domestics, etc." Charlevoix, Letters, Vol. II, p. 265. See the whole of this letter—XXX—for an interesting account of the organization of the Natchez, the position of the woman sun, etc.

⁴⁴ League of the Iroquois, p. 324.

⁴⁵ Charlevoix, Letters, Vol. II, p. 49, La Hontan, Vol. II, p. 36: London, 1703.

⁴⁶ League of the Iroquois, p. 325.

writers, it is evident that the causes that are to-day so instrumental in producing discord were equally powerful then. / It is worthy of note, however, that when such an untoward event did occur, the wife, even though the guilt was on her side, had but little reason to fear a scandal.⁴⁷ The cabin, or the portion of it occupied by the married pair being hers, it was the man who would have to leave; and even then he could not take anything with him as it was her privilege, in case of divorce, to strip him of all he had, though decency required that the present made to her at her marriage, or its equivalent, should be returned.⁴⁸ /

divorce

/ If, on the other hand, it was the man who was at fault, if when worn out by bickering and contentions at home he ventured to set up a rival establishment in the neighborhood, he had to be very sly about it, otherwise wife No. 2 would be likely to fare rather badly. Wife No. 1 might pounce down upon her at any time and rob her of all the provisions he had given her, and he was powerless to prevent it even when done in his presence.⁴⁹ / Thus tied, hand and foot, by inexorable custom, the man does not appear to have had any rights that the woman was bound to respect. From the cradle to the grave there was never a time when he was not subject to some woman who ruled him by virtue of her position in

divorce

⁴⁷ Lafitau, I, p. 585.

⁴⁸ "Une femme a droit dans le Divorce de depouiller le mari qui la quitte, et elle le fait sans qu'il s'y oppose. Pour agir dans les formes, il faudroit rendre aussi le present, ou un equivalent, de celui qui a été donné pour le Mariage?" Lafitau, Vol. I, p. 589. Perrot (Mœurs des Sauvages de l'Amérique, p. 22: Paris, 1864) says that among the Iroquois marriage was a mere temporary arrangement, but that among the Ontoïas (Algonquin) it was more permanent; and that among them, a man never divorced his wife without good reason. If he did, he would subject himself "à estre pillé et à mille confusions, puisque celle qu'il auroit quitté mal-a-propos pour en prendre une autre, se mettroit à la teste de ses parentes, et luy osterait ce qu'il auroit sur luy et dans sa cabane; elle luy arracheroit les cheveux et luy déchiroit le visage; en un mot, il n'y a point d'indignitez et d'affronts dont elle ne l'accableroit et qu'elle ne soit en droit de luy faire sans qu'il puisse s'y opposer, s'il ne veut devenir l'opprobre du village. Quand le mary n'en épouse pas d'autre, la femme qu'il a quittée peut le piller lorsqu'il revient de la chasse ou de la traite, luy laissant ses armes seulement, qu'elle luy oste enfin s'il ne voulait absolument retourner avec elle." Among the Shawnees, etc., it is said that "not unfrequently they take away everything the husband owns, his hunting equipage only excepted?" Archaeologia Americana, I, p. 285.

⁴⁹ Lafitau, I, p. 585. Perrot, l. c., p. 27, says the same custom prevailed among the Algonquin tribes north and south, and adds that very often this brought on a fight between the women, when, if they happened to belong to different gentes, their relations would sometimes take part, so that in the end it would become so serious that a chief would have to interpose and quell the row. La Potherie (Vol. II, p. 32: Paris, 1753) says that sometimes blood was spilled during these fights, during which "le Mari juge des coups d'un grand sang froid: cela lui fait même plaisir, parce qu'il dit que c'est une marque que les femmes l'aiment."

concl.

the household or in the gens. If he ran away, as was sometimes done, and "established a matrimonial alliance elsewhere," he could have no assurance of bettering himself. It was a change of masters, but not of condition, and it is just possible that after one or two such experiences he might have preferred to "bear the ills he had, rather than fly to those he knew not of." Literally there was no escape for him as long as he continued to form an integral part of the tribe. The yoke was riveted at every joint, and so far as law or custom could make it, the rule of the woman was one of the most ingeniously contrived despotisms that could possibly have been devised. That it was not originally intended to be such is of course well known; but it is none the less true that in its gradual development we have an instance in which a series of customs, the legitimate outgrowth of institutions that were in themselves perfectly natural, finally resulted in giving to the woman the entire control of affairs, even of those that are supposed to have been the peculiar province of the man. In proof of this, we have but to refer to their system of levying war. Here, if anywhere, it is fair to presume, that the man ought to have been master of his own acts, and yet we find that he could not go upon the warpath unless the women were willing. Theoretically of course, he was at liberty to do so whenever he pleased, but practically he was not; for the matron of any household to which some member of his party belonged, might come in at any moment and forbid their departure; and as this was a thing that neither the chiefs nor the council could do, it is regarded by the old chronicler "as proof that her influence, in some shape, was more real even, than that of the council of elders."⁵⁰ Concurrent with this right to forbid the departure of a war party, and apparently in pure mockery of the man's helplessness, was the right, which the woman also possessed, of sending him out on such an expedition whenever she pleased.⁵¹ These forays were not unfrequently made for the sole purpose of securing captives, or slaves for adoption into some family or gens that had, from some cause, been weakened, and as it was for the woman to decide when this was necessary or desirable, it follows that the war-making power was virtually in her hands. Thus we

⁵⁰ Lafitau, II, p. 168.

⁵¹ "Among the Hurons and Iroquois, where the matrons command and prohibit a war as seems good to them:" Charlevoix, Letters, I, p. 317.

are told that whenever she wished to engage any one who did not depend on her, as for instance some relative by marriage, "to levy a party for war whether it be to appease the manes of her husband, son or near relation, or whether it be to procure prisoners in order to replace those in her cabin of whom death or captivity had deprived her; she must make him a present of a collar of wampum, and such an invitation was seldom found ineffectual."⁵² In beating up for recruits it was not only the members of her own gens who were bound to make good her loss, but the duty also devolved upon those who were allied to it by marriage, or the *Athonnî* as they were termed; and herein is said to have consisted the advantage of having many males born in the gens. / For these men, though not in the line of succession, and to some extent isolated (*isolés et bornés à eux-mêmes*) in their own households must marry into other gentes, and the children born of these marriages, though strangers to their fathers' gens, were obliged to aid in making good the loss of those fathers in case of death or captivity; and hence it was that the matron who was in authority in the household to which the fathers had belonged, might send these children upon the war path whenever it suited her to do so, or she could prohibit them from engaging in any warlike expedition of which she did not approve.⁵³ / These war parties were sometimes absent for two or three years, and travelled several thousands of miles by land and water as was most convenient. When one of them returned from a successful foray, the first thing to be done was to decide upon the fate, or rather the distribution of the prisoners. Two or three were usually burned,⁵⁴ but by far the greater number, men as well as women and children, were scattered around among the different households for adoption, as it was by this means that the Iroquois were able to keep up their strength.⁵⁵ As soon as the council had come to a decision in regard to the prisoners, it was made known by a crier; and the distribution then took place in the public square without any noise or dispute. "Those women who had lost their sons or husbands in the war were commonly satisfied in the first place. Afterwards the warriors fulfilled the engagements entered into with those from whom they had received

⁵² Charlevoix, Letters, I, p. 317.

⁵³ Lafitau, II, p. 163.

⁵⁴ Lafitau, II, pp. 272, 273.

⁵⁵ Charlevoix, *l. c.*, I, p. 372. John Bartram's Observations, p. 79: London, 1751. Colden, Five Nations, p. 5: London, 1747.

collars of wampum ; if there were not a sufficient number of prisoners for this purpose, the defect was supplied with scalps, which were worn by way of ornament on days of rejoicing, but at other times were hung up at the gates of their cabins. If, on the other hand, the number of prisoners was more than sufficient for these purposes, the overplus was sent to their allies. The place of a chief was never filled up but by a chief, or by two or three slaves who were always burned. The Iroquois never failed to set apart some prisoners for the use of the public, in which case the council disposed of them as they thought proper ; but the matron still had the power to abrogate their sentence, being absolute sovereigns of the life and death of those who had been condemned or absolved by the council.”⁵⁶ In the case of a prisoner who had been assigned to a family, he was led to the door of the cabin and either introduced into it or left in the vestibule. If the chief matron decided to accept him, he was at once received into the family and gens, and entered upon all the privileges and assumed all the obligations of the person whose place he took.⁵⁷ But if, on the other hand, she refused to receive him and “threw him into the fire” as it was termed, he was invariably burned ; for there was no power in the tribe that could save a prisoner whom she had condemned, nor condemn one whom she had decided to save.”⁵⁸ **I**

I If now we turn to the political organization of these tribes we shall find that even in this unusual sphere the authority of the women was not less real.⁵⁹ Ostensibly the supreme power of the

⁵⁶ Charlevoix, *l. c.*, II, p. 371. See Timberlake's Memoir, p. 71 for the same Custom among the Cherokees.

⁵⁷ Lafitau, II, p. 308. La Hontan, *Voyages*, II, pp. 80, *et seq.* Colden, *Five Nations*, p. 9.

⁵⁸ “Celles à qui on les donne, en sont tellement les maitresses, que l'inclination de tout le village ne scauroit les sauver, si elles ont envie de les jeter au feu, ni les faire mourir si elles ont la volonté de leur donner la vie.” Lafitau, II, p. 273. “The prisoner was presented to the wife of Half King (a Wyandot chief), but she refused to receive him, which, according to the Indian rule, was, in fact, a sentence of death.” Heckwelder, *Historical Account of the Indian Nations*, p. 162: Philadelphia, 1819. Compare Du Pratz, *Histoire de la Louisiane*, Vol. II, p. 431, and Vol. III, p. 48: Paris, 1758, for a similar custom among the Natchez. La Hontan *Travels*, II, pp. 80 *et seq.*, may also be consulted, and Bossu (*Travels*, p. 105) tells us that among the Arkansas the women decide the fate of prisoners.

⁵⁹ Lafitau, I, p. 71. Charlevoix, *l. c.*, II, p. 25, upon this subject says: “The women have the chief authority amongst all the nations of the Huron language; if we except the Iroquois canton of Onneyouth, in which it is in both sexes alternately. But if this be their lawful constitution their practice is seldom agreeable to it. In fact, the men never tell the women anything they would have to be kept secret; and rarely any affair of consequence is communicated to them, though all is done in their name, and the chiefs are no more than their lieutenants.” In reply to this, it may be said, first, that

tribe was vested in a council composed of the chiefs and elders, though there is reason to believe that in all that they did they acted as attorneys for the women rather than independently and of their own volition. / As a rule their decisions were respected though this was not invariably the case; and in the event of opposition on the part of any individual, he was at liberty to follow the bent of his own inclination.

Of these chiefs, there were several grades. Lafitau, whom I generally follow, speaks particularly of two, the sachems and their assistants; and so, too, does Morgan, though he places in the second rank those chiefs whose position was due to personal bravery, wisdom in affairs or eloquence in council, and was, therefore, a reward of individual merit which died with its possessor.⁶⁰ There does not appear to have been any reason why a chief should not have been chosen an assistant and *vice versa*, and it may be, that originally the two classes formed but one,⁶¹ though they are spoken of as being distinct.⁶² First in rank among these chiefs, though not necessarily so in influence were the sachems, whose duties were confined to the affairs of peace,⁶³ and whose office was perpetual and hereditary in the gens — the succession being always continued through the woman, so that upon the death of a chieftain of this rank he was succeeded not by his son, but by the son of a sister or of some other female relation. "The tree having fallen" they were accustomed to say "it was necessary to raise it up again," and to this end upon the death of a sachem, the matron who presided over the household to which he belonged, after consulting with the members of her family

while it is possible that the Oneidas (Onneyouth) may have adopted this form of government, yet it is not probable for the reason that both Lafitau and Morgan — an earlier and a later writer — tell us that there was no difference in the customs of the Iroquois tribes; and if the statement of Charlevoix be true there must have been a very important difference; secondly, whether the men were in the habit of concealing important business from the women is a matter that cannot well be decided at this late day. Among the Natchez they are said to have done so on one memorable occasion, and the Great Sun being severely reproved by the Woman Sun for it, revealed the secret of the conspiracy to her, and she betrayed it to the French. However, be the fact as it may, we may be very sure, from what happened at the council of 1797 and at other times, that when the women did take part in public deliberations, they carried matters with a high hand. /

⁶⁰ Morgan, *Ancient Society*, p. 71: New York, 1877.

⁶¹ "These chiefs were originally invested with very limited powers; their principal office being that of advisers and counsellors of the sachems." *League of the Iroquois*, p. 100.

⁶² Lafitau, I, pp. 471-5-6. *Ancient Society*, pp. 77-131.

⁶³ *League of the Iroquois*, p. 101.

("cabane") and gens ("tribu") chose as his successor the person who seemed best fitted by his good qualities to maintain the dignity of the position. In making the selection she was under no constraint, but was perfectly free to act as she thought proper without regard to age or priority of birth. A notable instance of this occurred in the case of Catharine Brant, wife of the famous Mohawk chief, who chose John the fourth and youngest son to succeed to a sachemship, to which she possessed the right of nomination, and upon his premature death, in 1832, from cholera, she named as his successor the infant son of her daughter.⁶⁴ When the selection had been made by the matron and approved by the gens, it was announced to the tribe (village), and in good time the fortunate individual was proclaimed and recognized! The same formalities were observed in announcing the election to the other tribes of the confederacy and also to their allies, and this act was always accompanied by feasts and solemnities.⁶⁵

If the person chosen happened to be a child, as was sometimes the case, and incapable of acting for himself, it was customary to appoint a tutor or regent, whose duty it was to act for him, and to

⁶⁴ Life of Brant, Vol. II, pp. 500 and 537. I see no reason to doubt the fact as here stated, though the explanation of it is by no means satisfactory.

⁶⁵ Lafian, Vol. I, p. 471 *et seq.* Morgan (Ancient Soc., p. 72) says: "The choice which was by the free suffrage of both males and females of adult age, usually fell upon a brother of the deceased sachem or upon one of the sons of a sister." On p. 85 he is even more explicit, saying of the council of the gens: "It was a democratic assembly because every adult male and female member had a voice upon all questions brought before it. It elected and deposed its sachems and chiefs, it elected keepers of the Faith," etc. Charlevoix, Letters, II, p. 23, tells us that "at the death of a chief it is not his own but his sister's son who succeeds him; or in default of which, his nearest relation in the female line. When the whole branch happens to be extinct, the noblest matron of the tribe or in the nation chooses the person she approves of most and declares him chief." The Rev. Ashur Wright for many years a missionary among the Iroquois writes as follows to Mr. Morgan: "the original nomination of the chief always rested with them (the women)": House and House life of the American Aborigines, p. 65. Maj. Powell in Vol. I of the Publications of the Bureau of Ethnology, p. 61, says of the Wyandots: "In each gens there is a council composed of four women. These four women councillors select a chief of the gens from its male members—that is from their brothers and sons . . . The tribal council, therefore, is composed one-fifth of men and four-fifths of women. . . . The four women counsellors of the gens are chosen by the heads of the households, themselves being women. There is no formal election, but frequent discussion is had over the matter from time to time, in which a sentiment grows up within the gens and throughout the tribe that, in the event of the death of any councillor, a certain person will take her place. . . . When a woman is installed as councillor a feast is prepared by the gens to which she belongs, and to this feast all the members of the tribe are invited. The woman is painted and dressed in her best attire and the sachem of the tribe places upon her head the gentle chaplet of feathers, and announces in a formal manner to the assembled guests that the woman has been chosen a councillor."

do everything that he might be called on to perform for the public good. This, in their figurative language, was termed "adding roots to the tree."

Besides the sachems, and by way of a check upon any ambitious schemes that they might entertain, there was a grade of chiefs called assistants or *Agoianders*, without whose consent the sachems could not undertake anything. It was their duty to have an eye to the public treasury, provide for its safety and determine the manner in which it was to be expended. Each gens in a tribe was entitled to one representative of this rank, and like the sachems, he, too, was chosen by the women. Indeed, they sometimes named one of their own number to the position.⁶⁶

Concurrent with this right to name a chief and in some shape complementary to it, was the power to depose him, and this also is said to have been vested in the women. Mr. Wright for many years a missionary among the Senecas asserts it in the following emphatic terms: "The women were the great power among the clans, as everywhere else. They did not hesitate, when occasion required, 'to knock off the horns,' as it was technically called, from the head of a chief, and send him back to the ranks of the warriors." This statement is quoted by Mr. Morgan as being a "plain indication of the mother-right and gynocracy that prevailed among the Iroquois," and he also tells us that the picture was not overdrawn,⁶⁷ though elsewhere he speaks of this power as inhering in a council of the gens. This council, however, is said to have been a very democratic assembly, in which every female member had a voice,⁶⁸ so that in either event the women must have exercised no little influence in determining the fate of a chief, even if the matter were not exclusively within their jurisdiction.

In addition to the sachems and other officers thus far mentioned, there was in every gens a certain class of persons styled Keepers of the Faith, who designated the times for holding the periodical festivals, made the necessary arrangements for their celebration and conducted the ceremonies. In a general way too, they exercised a sort of supervision over the morals of the people, remonstrating with the evil-doers, and when necessary, reporting them to the council for exposure, which seems to have been their only

⁶⁶ " . . . les femmes les choisissent et le sont quelquefois elles-mêmes : Lafitau, I, p. 475. Charlevoix, Letters, II, p. 24.

⁶⁷ House and House-life of the American Aborigines, p. 66: Washington, 1881.

⁶⁸ Ancient Society, p. 85.

mode of punishment. They also delivered religious discourses whenever such things were deemed advisable; and as they were a systematically organized body with well defined duties,⁶⁹ it is difficult to understand why they should not be styled a priesthood. / To this order women were admitted in about equal numbers with the men, and to them were especially intrusted the care of preparing the feast which was provided at all councils, at the close of each day, for all persons in attendance. Their duties, however, were not confined to the supervision of the feast as "they had an equal voice in the general management of the festivals and of all their religious concerns." ⁷⁰ /

Keepers of
Feast.

These chiefs, assistants and sachems were not distinguished from the mass of the common people by any outward mark or insignia of rank, and like all Iroquois officers, they received no reward for their services. There was nothing of the absolute in their sway; and in case of any opposition to their decrees, they were powerless to enforce them. Their commands were wishes — nothing more — and obedience was voluntary. This freedom of action is said to have been a check on the chiefs and to have prevented them from issuing orders that might prove objectionable and so be followed by disobedience; whilst at the same time it prompted the common people to execute willingly the orders that were given them, since they were persuaded that, in so doing, they were simply following their own inclinations and not obeying any command. Hence arose an agreement between chiefs and people and a subordination of the one to the other that would have been desirable in the best regulated government."⁷¹

Although, as we have seen, these sachems and chiefs had no badge of office and were really possessed of no authority beyond their power to persuade, yet they seem to have been treated with a certain degree of consideration. They were assigned a leading part in all public festivals and at the funeral ceremonies; presents were often made to them, and they presided at all gatherings. Certain other prerogatives were also allowed them, not very important perhaps, but still indicative of their rank and the respect in which they were held. Among these, the most conspicuous was the place

⁶⁹ League of the Iroquois, p. 187.

⁷⁰ League of the Iroquois, pp. 184 *et seq.* Ancient Society, p. 82.

⁷¹ Lafitau, Vol. I, pp. 473 *et seq.* Compare La Hontan, Voyages, Vol. II, pp. 71 *et seq.*; and Colden, Five Nations, pp. 2 *et seq.*

assigned them in the transaction of public business, which was always conducted in their name. The council, too, only assembled at their request, and it met in their cabins save when there was a building especially destined for the purpose.

As these councils were the supreme deliberative body of the nation, tribe and gens respectively, and as they took cognizance of all sorts of matters and some one of them was almost constantly in session, it is important to look into their organization and method of doing business, as here, if anywhere, the influence of the women would make itself felt. Accordingly, we find that, on all occasions, the women were the first to deliberate, no matter whether the subject related solely to themselves or concerned the public welfare. They held their council apart, and having come to a determination they notified the chiefs of the matter about which they had deliberated, so that they, in their turn, might take it under consideration. The chiefs, being thus advised, assembled the elders of the tribe, and if the matter was of sufficient importance, it was referred to a general council of all the tribes composing the confederacy. At all such councils, the women were represented by their spokesman, whose duty it was to advocate their views⁷² no matter how much they might clash with his own. We are also told that there were occasions when the women themselves spoke in council, and an instance of it may be seen in the council referred to above, held in 1797, when Mary Jemison was allowed to plead her own cause; and thanks to her knowledge of certain boundaries and the general lay of the land, she was granted some thirty thousand acres instead of a hundred and fifty which the commissioners thought they had allowed.⁷³ And not only were the women represented in the councils by their spokesmen, but they sometimes held councils of their own and acted independently of the men. Thus we find them sending a message to Gen. Schuyler, A. D., 1776, in which they object to a certain proposed movement of the American troops on the ground that it

⁷² Lafitan, I, p. 483. Ancient Society, p. 117.

⁷³ Life of Red Jacket, p. 246: Albany, 1836. Among the Cherokees, Timberlake, *l. c.*, p. 71, tells us that "these chiefs, or headmen, likewise compose the assemblies of the nation, into which the war-women are admitted . . . Many of the Indian women being as famous in war as powerful in council . . . Old warriors, or war women, who can no longer go to war but have distinguished themselves in their younger days, have the title of Beloved." For the part taken by women in the council, on embassies, etc., among the Sioux, Houmas and Natchez, consult Carver, p. 301; Father Gravier in Shea's Early Voyages, p. 144; Charlevoix, Letters, II, p. 271.

was calculated to produce trouble. To this message Gen. Schuyler replied at a council held with the chiefs, and in the course of his answer he acknowledged the receipt of the belt sent him by the women, and he entreated them to prevent the warriors from doing anything that would have the least tendency to incur the resentment of the Americans, or interrupt the harmony which he hoped would subsist between the two peoples to the end of time. This was promised in the name of the women ;⁷⁴ but unfortunately for the Mohawks the influence of Sir John Johnson and others prevailed, and as their fighting men took part against the Americans in the war of the Revolution, the whole tribe was obliged to pay the penalty by a forfeiture of their homes in the beautiful valley that bears their name.

Even more to the point were the belt and message sent by the women of this same tribe to Sir Wm. Johnson in 1742, in which they advise him to give over a contemplated visit to the Oneidas as being fraught with danger. In it they say: "Brother, by this belt of wampum, we, the women, surround and hang about you like little children, who are crying at their parents' going from them, for fear of their never returning again to give them suck; and we earnestly beg you will give ear to our request and desist from your journey. We flatter ourselves you will look upon this our speech, and take the same notice of it as all our men do, who when they are addressed by the women, and desired to desist from any rash enterprise they immediately give way, when, before, everybody else tried to persuade them from it and could not prevail."⁷⁵

But it is unnecessary to pursue the subject further. The evidence here presented, taken from sources that are believed to be perfectly authentic, shows conclusively that the old chronicler is not far wrong when he assures us that, among the Iroquois, and inferentially among all the other tribes east of the Mississippi, "there is nothing more real than this superiority of the women. It is they who constitute the tribe, transmit the nobility of blood, keep up the genealogical tree and the order of inheritance, and perpetuate the family. They possess all actual authority; own the land, and the fields and their harvests; they are the soul of all councils, the arbiters of peace and war; they have the

⁷⁴ Life of Brant, Vol. I, pp. 123-131-132: Albany, 1865.

⁷⁵ Life of Brant, I, p. 9.

care of the public treasury; slaves are given to them; they arrange marriages; the children belong to them and to their blood is confined the line of descent and the order of inheritance. The men on the other hand are wholly isolated and restricted to their personal affairs; their children are strangers to them, and when they die, everything comes to an end, as it is only the women who can keep up and perpetuate the family. If there are only men in a household no matter in what numbers nor how many children they may have, it is doomed; and although by courtesy they are made chiefs, and public business is transacted by a council of old men, yet they act merely as the representatives of the woman and to aid her in those affairs in which it would not be becoming for her to appear and act for herself."⁷⁶ /

⁷⁶ Rien n'est cependant plus réel que cette supériorité des femmes. C'est dans les femmes que consiste proprement le Nation, la noblesse du sang, l'arbre généalogique, l'ordre des générations, et la conservation des familles. C'est en elles que réside toute l'autorité réelle: le païs, les champs et toute leur récolte leur appartiennent: elles font l'ame des conseils, les arbitres de la paix et de la guerre: elles conservent le fisc on le trésor public: c'est à elles qui on donne les esclaves: elles font les mariages, les enfans sont de leur domaine, et c'est dans leur sang qu'est fondé l'ordre de la succession. Les hommes au contraire sont entièrement isolés et bornés à eux-mêmes, leurs enfans leur sont étrangers, avec eux tout périt, une femme seule relève la cabane; mais s'il n'y a que des hommes dans cette cabane en quelque nombre qu'ils soient, quelque nombre d'enfans qu'ils aient, leur famille s'éteint; et quoique par honneur on choisisse parmi eux les chefs, que les affaires soient traitées par le conseil des anciens; ils ne travaillent que pour représenter et pour aider les femmes dans les choses, où la bienséance ne permet pas qu'elles agissent." Lafitau, Moeurs des Sauvages Américains, Vol. 1, pp. 71 and 72: Paris, 1724.

NOTES UPON HUMAN REMAINS FROM CAVES IN COAHUILA.

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IN 1880 Dr. Edward Palmer procured for the Museum an osteological collection of considerable interest from four caves in the limestone formation in the state of Coahuila, Mexico.¹

The first cave examined is in the western part of the state near San Antonio del Coyote, to whose inhabitants it is known as Coyote Cave. Its length originally was 150 feet, width 20 feet, and height 12 feet. This cave was discovered about 1865, by an Indian who told Dr. Palmer that when he led the first party into it many mummies were to be seen there carefully disposed, side by side, children between the grown people, each wrapped in its blankets and bound about with bands of netting. The treasure-hunters whom he conducted into the cave, brought out and broke up the bundles in search of gold, but finding none, they burned the human skeletons and interesting objects found with them. A small collection, it is said, was saved and sent to Spain. Since then the roof of the cave has fallen in, closing up the original entrance and filling up most of the chamber. Now, it can be entered only through a hole in the roof, by means of a rope. At the bottom of the shaft, Dr. Palmer found six bundles or "mummies" and a few scattered bones and fragments. Four of the bundles contained each a perfect cranium and nearly entire skeleton. Of the other two bundles, one contained a calvarium in pieces and a left humerus; the other, a femur, and the leg bones of several individuals, with a small enclosed bundle of bones, not yet opened. The outer wrappings of some of the bundles were encrusted with breccia to the thickness of an inch in some places.

Twenty-seven leagues southwest of Parras, near San Lorenzo de la Laguna, is the second cave Dr. Palmer explored. It is between 50 and 100 feet square. The floor inclines 55°, and the

¹ This collection is mentioned in the Fourteenth Report of the Museum, but the many interesting objects found in the bundles or loose in the caves have not yet been described. They are, however, on exhibition in two cases on the Mexican gallery of the Museum.—F. W. P.

height, which at the entrance is 15 feet, rapidly diminishes going inwards.

This may be the cave to which Dr. Wislizenus made allusion in 1847 as follows: "On the right hand or south of us,² a chain of limestone mountains was running parallel with the road. At the foot of a hill belonging to that chain, Señor de Gaba pointed out a place to me where some years ago a remarkable discovery had been made. In the year 1838 a Mexican, Don Juan Flores, perceived there the hidden entrance to a cave. He entered, but seeing inside a council of Indian warriors sitting together in the deepest silence, he retreated and told it to his companions, who, well prepared, entered the cave together, and discovered about 1000 (?) well-preserved Indian corpses, 'squatted together on the ground with their hands folded below the knees. * * * This is the very insufficient account of the mysterious burying-place. The Mexicans suppose that it belonged to the Lipans, an old Indian tribe, which from time immemorial has roved and is roving over the Bolson de Mapini."

About twenty years ago, many caves in this region were worked for salt-petre and at that time many bundles with their contents were used for fuel by the miners. From this cause Dr. Palmer did not find in the cave near San Lorenzo a single bundle undisturbed, but only bits of wrappings, sandals and a few other objects, in addition to some of the scattered human bones. Fifteen skulls, several fragments of skulls, a number of odd limb bones, with a few pieces of pelves and scapulæ were secured. Some of these bones were blackened and charred in spots, and evidently had been thrown aside by the salt-petre miners.

The third cave, twenty-six leagues east of Parras, near Acateta, is 93 ft. long, 5 to 8½ ft. wide, and but 4 ft. high in the highest part. The floor was covered with a layer of the excrement of rodents several inches deep, from beneath which six crania, a sacrum and several vertebræ were removed.

The fourth and last cave explored is situated fourteen leagues northeast of Monclova. Its length is 150 ft., width 15 to 20 ft., and height 12 to 20 ft. It was visited first in search of hidden Spanish treasure, afterwards by collectors of Indian trinkets, and still later its bundles served to feed the fires of the salt-petre workers. At the time of Dr. Palmer's visit, there remained only

² Dr. Wislizenus was marching from San Sebastian to San Lorenzo.

traces of the bundles, in bits of cloth, matting, etc., with one cranium and some fragments of crania. The left half of the skull is charred probably by the fires of the salt-petre miners.

SKELETONS.

The bones from the various caves are well preserved. They indicate a muscular and strongly built people. None of the bones of the skeleton show marks of disease or injury, except the lower third of a right fibula from a bundle in Coyote Cave. This fragment is much thickened by some inflammatory process.

Four atlases only were found, belonging to the four skeletons from Coyote Cave. Each has a foramen for the vertebral artery, formed by a spiculum of bone carried over the usual groove to the posterior border of the arch. Upon two of the vertebræ this bony bridge is very broad, is perforated near its origin, and sends off a stay to the transverse process.

Forty-six per cent, or six, of the thirteen humeri are perforated through the olecranon fossa. The perforations vary in shape and size with the different skeletons and with the two sides of the same skeleton. In one instance the bone of one side is perforated, and that of the opposite side is entire.

The linea aspera of the femur is carinated.

The sixteen tibiæ are all more or less flattened as compared with the tibiæ of Europeans. The antero-posterior and breadth diameters of the bone being taken at the level of the nutrient foramen, according to Wyman's method, the breadth *index* averages for the sixteen tibiæ 626; the maximum being 697, that of both tibiæ of skeleton No. 22846, and the minimum 513, that of a left tibia No. 22665. Beside the skeleton No. 22846, there are two others having both tibiæ, and in each instance the flatter tibia is upon the left side.

Stature. — Following the usual method of estimating the height from the skeleton by reckoning the length of the femur as .275 of the height; the femora of thirteen skeletons give an average stature of 1662 mm. or 5 ft. 5.3 in. The maximum is 1680 mm. or 5 ft. 6.1 in., calculated on a femur from San Lorenzo Cave. The least stature is 1502 mm. or 4 ft. 9 in., but this may be that of a woman as the femur on which its estimation is based is the most slender of the thirteen. The average is 12 mm. or about $\frac{1}{2}$ in. above Topinard's mean for all races; but eight of the thirteen are below this average.

Lengths and Proportions of the Long Bones.—There are four paired humeri, two odd humeri, a right and a left, and the lower half of a left humerus, from Coyote Cave. From San Lorenzo Cave, there are two humeri, belonging to the left side. The five right humeri average 314 mm. in length, and the seven left humeri have an average length of 316 mm. When the left humerus varies at all in length from the right humerus of the same skeleton it is found to be shorter.

Corresponding to the four paired humeri from Coyote Cave, there are three paired radii and one left radius, and, from the same cave, two odd right radii. From San Lorenzo Cave, there is a left radius. The average length of the five right radii is 250 mm. and of the five left radii 252 mm. As in the humeri, when any variation occurs in the length of paired bones that of the left side is the shorter.

The ratio expressing the relative lengths of radius and humerus has been found to establish a broad distinction between races. Broca found this ratio in negroes to be 794 and in Europeans 739. The four skeletons from Coyote Cave give a humero-radial index of 796, by which they are widely separated from the European and more nearly resemble the negro-type.

Three skeletons from Coyote Cave are represented by their femora, two by pairs and one by that of the right side only. From the same cave there are also three single right femora and an odd left one. From the cave near San Lorenzo we have an odd right femur and five left femora. The average length of the bone of the right side is 447 mm.; of that of the left side 445 mm. Upon one skeleton, the femora of opposite sides of the body are of the same length, upon the other skeleton, the left femur is the shorter.

Corresponding to the femora from Coyote Cave, there are a right tibia and two paired tibiæ, and in addition an odd right and three odd left tibiæ. There are from the cave near San Lorenzo five odd tibiæ, four belonging to the right and one to the left side. The length of the nine right tibiæ averages 381 mm. and of the seven left tibiæ 382 mm. The left tibia is longer than the right by 1 mm. upon one skeleton, but is shorter than the right tibia upon the other two skeletons.

The femoro-tibial index averages 867 upon three skeletons, furnished with both bones for comparison.

The intermembral index, or the expression of the proportion existing between the superior and inferior extremities, which is found by comparing the added lengths of the humerus and radius with those of the femur and tibia, is 678 in the three skeletons from Coyote Cave. Broca states this to be 683 in the negro and 697 in the European.

Unfortunately, the results of observations on the bones from these caves do not carry as much weight as if they were based upon a larger number of skeletons. So far as they go, they serve to establish the following facts. First, when any variation is seen in the length of corresponding bones from the same skeleton, it is the bone of the right side of the body which is the longer. Second, the clavicle in relation to the humerus is longer than among Europeans. Third, the superior extremity relatively to the inferior is shorter than among Europeans. Fourth, this shortness of the superior extremity depends upon the shortness of the humerus, as the forearm as compared to the arm is longer than among Europeans. Fifth, the tibia is relatively to the femur longer than among Europeans, which must be taken into consideration as influencing the relative length of the two extremities. By all these characters the skeletons from Coahuila are nearer to the negro than to the European type.

CRANIA.

Twenty-five crania, most of them perfect, including three of children, were found suitable for measurement. Of these, fourteen, one that of a child, were collected in the cave near San Lorenzo; six, two belonging to children, came from the cave near Acateta; four, each with its accompanying skeleton, were found in bundles in Coyote Cave; and a single cranium was picked up in the cave near Monclova.

In the determination of sex and age, the methods of Broca and Topinard have been followed. The crania of adult individuals are thus classed as fifteen male and seven female. The men were from twenty to seventy years, the women from twenty-two to forty-five years. The average age of the men was forty-five, of the women thirty-six. The three children were respectively, ten, eleven, and thirteen years.

Dolichocephali.—Fifty-six per cent, or fourteen skulls, are long. Of these, three of men and two of women are from the San

Lorenzo Cave, four of men and two of children are from the Acateta Cave, two of men are from the Coyote Cave and one woman's cranium is from the Monclova Cave. That each of these disassociated caves contributes a large per cent of the crania found in it to the dolichocephalic class authorizes the inference that a long-skulled people were formerly widely distributed over Coahuila.

The skulls are small; the men's having an average capacity of 1361 cc. and the women's 1100 cc. Four of the nine men's and all the women's and children's crania are microcephalic.

None are flattened posteriorly or otherwise deformed so as to depreciate the value of measurements taken upon them.

In profile, the long skull presents to view an oval, with the larger end behind. Commonly, it rests in ordinary equilibrium, but two rest in posterior condyloid, and one in posterior mastoid equilibrium. From the ophryon over the vertex to a point just above the obelion, the outline is defined by the carinated ridge. At the ophryon, this ridge is narrow, but gradually widens as it approaches the bregma. Here, again, it is narrow, but increases in width until, just above the obelion, it bifurcates, and either encloses a small slightly flattened area, the region of the obelion, or runs down divergently to the lambdoid suture, or disappears upon the parietal bone. Over the frontal bone the outline is retreating, and for two-fifths of the sagittal length it extends horizontally or rises a little on skulls with a prominent carinated ridge. Just before its bifurcation, the ridge diminishes in strength, and this with the slight flattening over the obelion gives a sloping outline to the posterior two-fifths of the parietals. Below the lambda is seen the gently swelling occipital scale. Posteriorly, the diameter of maximum length ends midway between the lambda and inion on two, a little below midway in most, and over the inion in two, crania. The vertical plane of the inion is but little posterior to that of the lambda; its horizontal plane but slightly raised above the alveolar plane.

The mastoid process is noticeably full and broad. Its long, rough posterior border is directed obliquely downwards and forwards. A line continuing this border upwards and backwards would pass along the line of the posterior portion of the temporal ridge.

The temporal ridge embraces in its sweep the greater part of the side of the head. Passing close in front of the asterion and along the lambdoid suture from one-third to half-way to the lambda, it

then curves forwards over or above the parietal eminences, reaching its highest point about 2 cm. back of the coronal suture, where it is separated from the ridge of the opposite side but 88 mm. in the male and 80 mm. in the female skulls.

Viewing the skulls from either behind or in front, one is struck with their pentagonal form. The longest side of the pentagon is the base of the skull, and next in length are the nearly flat sides of the head, which turn at the parietal eminences to form the slanting roof. The sharpness of the superior angle depends on the strength of the carinated ridge. Although in three skulls the diameter of maximum breadth ends at the centre of the parietal eminences, and in two over the squamous suture, yet in the majority it ends at a point a little below midway between the centre of the eminences and the squamous suture. It falls uniformly back of the auriculo-bregmatic line, a distance averaging 23 mm. on the male, 17 mm. on the female, and 25 mm. on the children's crania.

Both vertex and base are oval. The narrower end is anterior, except in Nos. 22648 and 22693. These two are noticeable from other characters than their narrow bulging occiput. They are microcephali: long, low and very narrow, with the same breadth index of 674. Their diameter of maximum breadth ends at the squamous suture. Their exaggerated length is not due to synostosis; for, except the basilar, the sutures are all open, internally as well as externally. The lambdoid suture of 22648 is just beginning to close on the left side near the lambda. No. 22693 is from the cave near Monclova, and from the same cave there are two calvaria, wanting the frontal bone with open sutures which are of the same long and narrow form with a full occiput. No. 22648 if viewed by itself might be considered abnormal, but No. 22693 and its associated calvaria from another cave present the same shape so slightly modified as to link it with the rest of the group, making it evident that both skulls must be taken as only individual variations of the long type.

The various surfaces, spines and processes for muscular attachment upon the base of the skull are well developed. The pneumatic spine of Hyrtl is seen upon two.

The position of the foramen magnum was reached by means of projection measurements on the mature skulls. Two of the skulls of women, unfortunately, are unfitted for this measurement

by the broken condition of the alveolar process. The average centre of the base of the skulls of men is 3 mm. in front of the basion, back of which the foramen magnum stretches for 35 mm., bringing its centre 20 mm. back of the centre of the base of the skull. In one woman's skull, it is 16 mm. back of the centre of the base. There is no constant relation between the capacity of the skull and the size of the foramen magnum, although the largest skull has the largest, and the smallest skull the smallest foramen magnum.

The three most extensive sutures, the coronal, sagittal and lambdoid, increase in complexity going backwards, the coronal corresponding to 2 and 3, the sagittal to 3 and 4 and the lambdoid to 3, 4 and 5 of Broca's scale. These sutures are open in five male and three female skulls. The metopic suture is closed, yet in all but one male skull, there is seen over the glabella a criss-crossing of bony ridges, the serrations of the closed and partially obliterated suture. The frontal, in no instance, articulates with the temporal. The shortest spheno-parietal suture measures but 7 mm. It is on the right side of No. 22646. The internasal suture is closed in No. 22644, and has begun to close in the crania of two adults and a child, all three from Acetata Cave. The intermaxillary suture is seen only on the palatine surfaces of No. 22823 and of the children's skulls.

Eight of the fourteen have no Wormian bones. Six, four of men, one woman's and a child's, have Wormian bones, all of the size numbered 3 in Broca's scale. The woman's skull, No. 22693, has a long bone crossing the right half of the lambdoid suture. The child's skull, No. 22699, has a similarly shaped bone in the same place. No. 22698 has a square bone in the right masto-occipital suture, No. 22701 a long bone, crossing the left masto-parietal, No. 22846 has a long bone crossing each masto-occipital, and No. 22823, three long ones crossing the lambdoid suture, and a triquetral over the lambda. Occasionally very minute supernumerary bones are seen in the coronal suture near the stephanion or in the more intricate of the lambdoid sutures.

The face is long; the diameter of length for the nine male skulls averages 98 mm. This gives, notwithstanding the considerable breadth of the face, the large facial index of 731. The only female skull that could be measured has a facial length of 91 mm. and a facial index of 728. By average length of face and facial index, they resemble the thirteen Greenland Esquimaux skulls, whose

mean measurements are given in the *Crania Ethnica*. The bizygomatic diameter, which gives the maximum breadth of the face, was taken upon seven male and two female skulls. In four of the nine it exceeds the maximum breadth of the head, and in the remaining five the excess in favor of maximum breadth of the head is very slight. A breadth of face exceeding the breadth of the head is characteristic of most skulls of Greenland Esquimaux, according to the measurements recorded by several authorities.

The forehead is remarkably narrow. The glabella commonly projects beyond the ophryon, yet it is not usually prominent. When the superciliary ridges are heavy, the glabella is no more prominent than they, and may be sunk between them. The apparent prominence of the glabella is liable to be exaggerated by a supranasal depression. Such a depression appears upon two skulls, but the others have the root of the nose either on the vertical plane of the glabella or anterior to it.

The interorbital space is narrow and the naso-frontal suture extends higher upon it than the maxillo-frontal, so that these two sutures do not make an even curve or straight line across the space.

The nasal bones are long and of medium width. They are set together at an angle, varying in openness, from a nearly right angle in No. 22846 to a most obtuse in No. 22648. The breadth of the nasal aperture shows considerable individual variation. Five male skulls are leptorhine, three skulls, two male and one female, are mesorhine, and three, two male and one female, are platyrhine. The form of the aperture varies between oval and heart-shaped. One skull has a sharp single lower border to the nasal aperture. Four have this lower border blunt. In six the lines from spine and side are not continuous. In three of these six they are separated by a distinct pit. The nasal spine is short and usually blunt.

Most have straight brows and square orbits. None are microseme. Ten are megaseme and four are mesoseme.

The palate is either hypsiloid or slightly elliptical in form. None are prognathic. Five males and the two children are orthognathic, four males and one female are mesognathic. Unfortunately, two female skulls have broken alveoli and cannot be measured for gnathism. There is no dental prognathism, for the

incisors in those jaws in which they remain are set vertically in the sockets.

Exostoses are rare. Three male skulls have each a thin, slender oval tumor on the middle of the posterior wall of each meatus, the long diameter extending into the opening. One has, in addition, a small oval exostosis on the lower margin of the nasal aperture of the right side. A female skull from the San Lorenzo Cave has a small conical hyperostosis on the superior maxillary midway between the lower margin of the orbit and the first molar.

Two skulls bear marks of superficial wounds; No. 22656 in a small pit in the frontal bone probably at the base of some scalp wound, and No. 22645 in a small flattened spot with three slight cuts above it on the right parietal near the centre of the bone.

Mesaticephali.—Nine crania belong to this class. Seven, six of adults and one of a child, are from the San Lorenzo Cave. Two adult crania are from the Coyote Cave. But it will be remembered that eleven long skulls were got in the San Lorenzo Cave, and two long skulls in Coyote Cave, so that wherever mesaticephali are found dolichocephali are also found in as great or greater number, while one cave, that near Acateta, is represented only by six dolichocephali. As, therefore, the long skull seems to be the prevalent cave type, only variations from it in the other classes are given. The mesaticephali are of greater capacity: four males are megacephalic, two female skulls are mesocephalic, and one male and one child's are microcephalic.

No. 22658 is slightly flattened posteriorly on the right side, so as to push forward a little the parietal eminence of that side. The measurements of the skull are not affected by this inconsiderable distortion. The other mesaticephali are of normal shape. There is less slope to the posterior portion of the parietals than in the long skulls, the outline being more rounded in that region. The long diameter falls upon or above the middle of the occipital scale in six of the nine and in none falls so low as theinion. This is higher than in the long skulls. Theinion is also raised higher above the alveolar plane than in the long skulls, and the whole occiput is higher.

The temporal ridge passes above the parietal eminences, although it does not, particularly in the female skulls, enclose so

much of the side of the head as in the long skulls. The mastoid processes are a little shorter, narrower and less full than in the long skulls.

The maximum breadth diameter falls farther back and higher than in the long skulls, but not so high or far back as the parietal eminences.

Like the long skulls, both vertex and base are oval, narrower anteriorly. The lines, spines and processes for muscular attachment, though well developed are not so strong, as a rule, as in the long skulls. No. 22827 has the pneumatic spine of Hyrtl.

The centre of the foramen magnum is 17 mm. back of the centre in the men's skulls. This is 3 mm. anterior to the same point in the male long skulls. The size of the foramen magnum does not bear a constant relation to the size of the skull.

The sutures are of the same general character as in the dolichocephali. The shortest spheno-parietal suture is that of No. 22651, which measures 7 mm. The internasal is open in all. Traces of the intermaxillary appear on the palatine surface of three, one, a child's, No. 22654, the other two, those of young adult females from San Lorenzo Cave.

None have Wormian bones of more than medium size. No. 22649 has a square Wormian in the left masto-occipital; No. 22827 has a long bone in the left masto-parietal and an epipteris on the right side. No. 22651 has a long bone lying across the left half of the lambdoid suture near the lambda. Several have minute Wormian bones in the more intricate parts of the long sutures.

The face is a little shorter and the facial index less than that of the dolichocephali. All have the bizygomatic less than the maximum breadth diameter, differing in this respect from some of the long skulls. The forehead is narrow, low and retreating. Only two have heavy superciliary ridges. None have a supranasal depression, or a prominent glabella. The nasal bones are as long and broader, and do not form as open an angle by their junction as in four of the long skulls.

Four are leptorhine, two platyrrhine. The nasal aperture is oval or heart-shaped. The lower border is formed by a single sharp line. On No. 22827 the lines from the side and spine are not blended, but separated by a deep pit. The nasal bones of No. 22658 appear to have suffered an arrest of development.

The dwarfed bones are united into a bit of bone longest in the median line, where it measures 10 mm., while the length on the side is but 7 mm. Where it joins the frontal, its width is 4 mm., at its point of greatest width it measures 5 mm. The tip is only 3 mm. wide and is curved up like a hook.³ The lower border of the nasal aperture is sloping. This skull is prognathic. The rest of the adult skulls are divided equally between orthognathic and mesognathic. The child's skull is orthognathic. The palate is elliptical or hyperbolic. All are megaseme but one, and have straight brows and square orbits. One is mesoseme.

Three male skulls have one or more exostoses in each meatus. No. 22827 has long flattened tumors passing into each meatus on the anterior inferior and posterior inferior walls, the larger tumor being on the posterior inferior wall. No. 22791 has a long crest-like tumor with its long diameter passing into the opening situated on the posterior inferior wall of each meatus, and a thickening of the anterior walls. No. 22649 has a rounded oval tumor on the middle of the posterior wall, and a thickening of the anterior wall of the right meatus. The left meatus has upon the middle of the posterior wall a large globular tumor, which sends a slender offshoot into the canal.

Two of the male skulls bear traces of wounds. Upon the middle of the right parietal above the eminence of No. 22657 is seen a pit about a centimetre in depth. At this point the endocranium is smooth and uninjured, saved probably by the unusual thickness of the bone. Although a small skull and deprived of most of its face, yet so thick are its walls its weight is 30½ oz. The next heaviest skull is No. 22646, which has a perfect face and yet weighs but 27 oz.

No. 22791 has sustained a remarkable injury, inflicted by a stone arrowpoint which is retained in the superior meatus of the nose. This was discovered by Dr. W. F. Whitney and described by him before the Boston Society of Natural History. The following report of his remarks is taken from the Proceedings of the Society for 1881. "An arrow had entered through the inner side of the left orbit close to the lachrymal duct, pierced the septum, and merely broken through into the right orbit by a small

³ A similar arrest of development of the nasal bones is seen in No. 18599, from a Stone Grave of the Cumberland Valley, Tennessee.

portion of its edge. It was thus lodged close beneath the ethmoid bone and imprisoned there by the partial closure of the entrance through a formation of new bone, which showed also that the man had been shot weeks or even months before his death." Besides this interesting lesion, a blow upon the forehead just above the left brow dented the outer and fractured the inner table. This fracture was perfectly repaired and over the seat of it is a deposit of new bone in the shape of a flat button, measuring a centimetre across.

Brachycephali.—Two broad skulls, a male and a female, were found in San Lorenzo Cave. As this cave has long been open and all the crania from it were found disturbed, these two brachycephali may have been later burials. Apparently, brachycephali were exceptional among the people burying in these caves.

Both are natural shapes. They are microcephalic. The female rests in normal, the male in posterior condyloid equilibrium. The long diameter strikes higher, midway between the lambda and inion in the male and above midway in the female, and the vertical projection of the inion also is greater than in the dolichocephali and mesaticephali. The maximum breadth diameter falls more than a centimetre back of the auriculo-bregmatic line, below the centre of the parietal eminences in both, upon the squamous suture in the male and 20 mm. above it in the female skull. The temporal line curves over the parietal eminences. The mastoid processes are shorter and narrower. A rough line crossing the mastoid process above continues the superior occipital line. The centre of the foramen magnum is back of the cranium 19 mm. in the male, and 23 mm. in the female skull.

The sutures are open; the sagittal, coronal and lambdoid of No. 22647 are beginning to close. Their general character is the same as in the dolichocephali and mesaticephali; but in contrast with these, both have large Wormian bones in the lambdoid suture. No. 22653 has two No. 4 of Broca's scale, a little to the right of the lambda. This skull has besides minute bones in the coronal over the stephanion. No. 22647 has in the left half of the lambdoid suture two No. 3 Wormian bones, and two No. 4, and in the right half two No. 3, and one of unusual size, whose long diameter, lying along the suture, measures 54 mm., and its vertical diameter at the widest part measures 36 mm.

The face is a little shorter than the average of the dolicho-

cephali and of the mesaticephali. The male has a facial index of 664, and the female of 719. The bizygomatic is less than the maximum breadth of the head. There is no supranasal depression.

The internasal suture of 22647 is nearly obliterated. Its nasal bones by their junction form an obtuse angle, nearly right. The lower border of its nasal aperture is sharp, with a well-developed nasal spine. No. 22653 has a long, interorbital process with nearly horizontal suture below it. Its nasal bones are set together so as to form a more open angle. The nasal spine is short and blunt, and the lower border of the aperture, sloping.

The brows are nearly straight, and the orbits open and square. The jugal spine is no more prominent than in the preceding varieties. As is usual, this spine differs in size and shape on the two sides. It is wanting on the right side of No. 22653.

No. 22647 has exostoses in the auditory canals; on the right side a general thickening of the walls, and upon the middle of the posterior wall a globular tumor; on the left side the walls are thickened, which with a thick oval tumor on the middle of the posterior wall greatly reduces the calibre of the opening. At the narrowest point the antero-posterior diameter measures but 3 mm. No. 22653 has no exostoses in the meatus. In the middle of the forehead of No. 22647 is a superficial pit with slight traces of inflammatory action about it. There are no other marks of injury upon either skull.

In summing up the observations upon the twenty-five crania the following tables present the more prominent points:

TABLE I. CAPACITY.

	Megacephalic.			Mesocephalic.			Microcephalic.		
	♂	♀	?	♂	♀	?	♂	♀	?
Dolichocephalic.....	1			4			4	2	2
Mesaticephalic.....	4				2		1		1
Brachycephalic.....							1	1	
Sum.....	5			4	2		6	3	3
Total.....	5			6			12		

The cranial characters common to all are the excess in length of the parietal over the length of the frontal and occipital longitudinal axes, the maximum breadth falling back of the auriculo-bregmatic line, the foramen magnum back of the centre of the base, and the low, narrow forehead and retreating frontal. A carinated ridge is common. All the lines, ridges and processes for muscular attachment are strongly developed, and the temporal line includes a large part of the side of the head. The mesaticephali and brachycephali vary from the more numerous dolichocephali in having the occiput less prominent, and smaller mastoid processes, as well as in the number, size and position of the Wormian bones.

The following table shows the position as to the sutures of the twenty-two Wormian bones found on eleven crania. Their size in the dolichocephali and mesaticephali does not exceed No. 3 of Broca's scale, while in the two broad skulls they are of the sizes 3, 4, 5 of the scale.

TABLE II. WORMIAN BONES.

	Epipteric.			Masto- parietal.			Masto- occipital.			Lambdoid.		
	♂	♀	y	♂	♀	y	♂	♀	y	♂	♀	y
Dolichocephalic..... ⁶				1			3			5	1	1
Mesaticephalic..... ³	1			1			1				1	
Brachycephalic..... ²										5	2	
Sum.....	1			2			4			10	4	1
Total....	1			2			4			15		

Seven adult crania, or 36 per cent, have exostoses in the auditory canals. Dr. Blake found 5 per cent of 108 Californian crania, and 18 per cent of 195 mound-builders' crania, with exostoses in the meatus auditorius. There are sixteen exostoses in seven Mexican skulls, found in both canals of each. In the three mesaticephalic and brachycephalic crania the tumors are attended with a

TABLE III. EXOSTOSES.

	Anterior Wall.						Posterior Wall.					
	Flattened.			Rounded.			Flattened.			Rounded.		
	♂	♀	y	♂	♀	y	♂	♀	y	♂	♀	y
Dolichocephalic..... ³							6					
Mesaticephalic..... ³	2						2			4		
Brachycephalic..... ¹										2		
Sum.....	2						8			6		
Total.....	2						14					

general thickening of the wall of the canal. The face is long, straight and broad. The orbits open and square. The incisors which remain are vertical. The palate is broad and deep. The teeth are sound, but much worn by use.

TABLE IV. GNATHISM.

	Orthognathic.			Mesognathic.			Prognathic.		
	♂	♀	y	♂	♀	y	♂	♀	y
Dolichocephalic.....	5		2	4	1				
Mesaticephalic.....	2	1	1	1	1		1		
Brachycephalic.....				1				1	
Sum.....	7	1	3	6	2		1	1	
Total.....	11			8			2		

This table is interesting as it shows a decided tendency to orthognathism, and also because it is seen by it that the three children's crania have already assumed the prevailing form.

The nasal bones are long and broad, broader below than above, and set together at an obtuse angle not far from a right angle. The shape of the nasal aperture as seen by the following table varies greatly. The platyrhines have smaller nasal bones, set at a more open angle.

TABLE V. SHAPE OF NASAL APERTURE.

	Leptorhine.			Mesorhine.			Platyrhine.		
	♂	♀	y	♂	♀	y	♂	♀	y
Dolichocephalic.....	5			2	1		2	1	2
Mesaticephalic.....	2	2				1	2		
Brachycephalic.....				1				1	
Sum.....	7	2		3	1	1	4	2	2
Total.....	9			5			8		

From the preceding table it appears that the male skulls tend to be leptorhine, and the female and children's to be mesorhine and platyrhine.

As to the openness of the orbits, there is a great uniformity running through these skulls, as is shown by the following table.

TABLE VII. SHAPE OF THE ORBIT.

	Megaseme.			Mesoseme.			Microseme.		
	♂	♀	y	♂	♀	y	♂	♀	y
Dolichocephalic.....	6	2	2	3	1				
Mesaticephalic.....	5	2	1		1				
Brachycephalic.....	1	1							
Sum.....	12	5	3	3	2				
Total.....	20			5					

The lower jaw is noticeably slender. Its actual weight is less than a Californian, Peruvian or mound-builder's jaw of the same period of life. The height at the symphysis is always greater than at the last molar. The chin is prominent. The ramus is narrow and low, its coronoid slightly exceeding the condyloid process in height. The sigmoid notch is shallow. The condyle is small. The angle is everted in eleven of the fourteen jaws.

There is no anomaly of the teeth, except a small supernumerary tooth between the central incisors of each of the two upper

jaws. All the teeth are large and closely set. The incisors are vertical. The first upper molar shows traces of four cusps, but in all adult upper jaws this molar is worn so as to expose the ivory, and in four instances a clean section of the tooth has been made. In one case no enamel is to be seen, the tooth is worn to the neck, and the pulp cavity exposed at three points, a condition Broca designates as exceptional. There has been an abscess at the root of the tooth with considerable alveolar absorption probably to be traced to the irritation of attrition, after the pulp was exposed. The condition of the teeth of all these crania points to the use of hard, coarse food. One hundred and eighty-nine teeth are retained in the sockets of the twenty-three upper jaws. The rest with few exceptions have fallen out post-mortem. Two per cent of the retained teeth are carious, and two per cent of the empty sockets show traces of inflammatory action about the roots of missing teeth.

The lower jaw has also large teeth set close together. Its first molar has commonly five cusps. The wear is downwards and outwards, for all but the incisors which wear horizontally. Some of the teeth of both upper and lower jaws are excavated by use. The fourteen lower jaws have retained one hundred and forty-one teeth, of which but one is carious. None of the empty sockets of the lower jaw point to an unhealthy condition of the missing teeth. The lower jaw of No. 22647 is missing. The teeth of the upper jaw are worn flat, nearly to the neck. Upon the right side the molars have been lost by disease, and the alveoli are absorbed. The loss of these teeth has probably affected the wear of the second bicuspid adjoining, which has the posterior half of the crown worn off obliquely upwards and backwards. Upon the left side is the first molar whose extreme degree of wear has already been described.⁴

⁴ The left half of a child's upper jaw No. 22660 from San Lorenzo Cave, and the lower jaw of an adult No. 22701 from Acateta Cave were examined as to their dentition by Dr. W. C. Barrett of Buffalo, N. Y. No. 22660 belonged to a child seven years old. Where the bone is broken away, the first permanent bicuspid may be seen lying transversely with its root directly in the path of the permanent canine. This tooth Dr. Barrett states "might possibly have righted itself." He also remarks upon "the extraordinary wear of the deciduous teeth," which "gives considerable insight into the food, habits and early development of that people."

The two last molars of the left side of No. 22701 had each a large cavity in the grinding surface. When the jaw was found these cavities were filled with what "proves to be an organic substance." Dr. Barrett thinks it may be the remains of food and fluids "certain internal evidences that it was not designedly placed there as a stopping."

CONCLUSIONS.

The foregoing observations indicate that the people who buried their dead in the caves of Coahuila were a strong-built, muscular race, of medium height. By the proportions of their skeletons they resemble the negro more nearly than the European type. When these burials were made, a natural long skull of small capacity was the most common form. This small, long head had a long, large face, with broad cheek bones, straight brows, square open orbits, a prominent straight nose, and wide but not projecting mouth, furnished with comparatively sound teeth, well worn by mastication. The black straight hair was worn in queues.

To what tribe they belonged or what was the date of their burial is unknown. Wislizenus, in connection with the Burial Cave near San Lorenzo which he describes, alludes to a conjecture that they were ancient Lipans. This is the only attempt at a solution of the problem.

The only crania from this region, whose measurements I have seen, are three Lipans, nine Comanches and thirty Apaches, given in the Check List of the Army Medical Museum edited by Dr. George A. Otis. One of three Lipans, one of the nine Comanches, and three of the thirty Apaches are dolichocephalic. This is hardly such a proportion as to ally them to the long-headed Cave people.

A larger collection of crania and bones from northern Mexico is needed to throw more light upon this question. By the aid of more material and further research it may become possible to trace the origin, wanderings and connections of this medium-sized, long headed people who buried their dead in the Caves of Coahuila.

The following tables give the particular measurements upon which this sketch is based.⁵

⁵ The capacity is taken with mustard seed and measured by Busk's craniometer. All the diameters are taken with Flower's craniometer. The circumferences and arcs are taken with the tape measure. The projection measurements are taken by means of Broca's projection board.

All the measurements are taken and indices calculated according to Broca, except the following: those of the palate after Flower, the naso-malar angle after Flower. The nasal bones are measured with calipers after De Quatrefages. The bimaxillary is the maximum diameter through the mastoid processes, the mastoid length is the vertical diameter from the tip of the process to a point vertically above it on the posterior root of the zygoma.

TABLE I. DOLICHOCERPHALI.

MUSEUM NO.	SEX.	LOCALITY.	CAPACITY.	LONGITUDINAL DIAMETERS.				TRANSVERSE DIAMETERS.						HEIGHT, BASI-PREGNATIO.	INDEX OF BREADTH.	INDEX OF HEIGHT.
				GLABELLO-OCCIPITAL.	OPHTHO-OCCIPITAL.	OPHTHO-OCCIPITAL MAXIMUM.	OPHTHO-OCCIPITAL.	MINIMUM FRONTAL.	STEPHANIAE.	DI-MASTOID.	DI-ADRICTULAR.	TEMPORAL.	MAXIMUM.	ASTERIAE.		
22644	♂	San Lorenzo	1300	184	183	183	184	88	107	122	119	130	132	117	136	743
22645	♂	"	1550	180	187	187	184	96	117	131	127	133	136	118	138	738
22646	♂	"	1375	181	181	181	181	101	108	132	125	131	135	114	145	801
22697	♂	Acaletta	1325	183	182	182	174	92	113	125	120	129	133	109	125	731
22698	♂	"	1275	181	180	180	174	91	—	131	121	128	132	114	130	722
22701	♂	"	1400	188	185	185	174	86	111	129	121	130	138	—	131	746
22702	♂	"	1350	177	178	178	176	94	110	122	118	128	132	101	129	725
22823	♂	Coyote	1100	184	181	176	176	96	113	125	120	122	131	108	140	724
22845	♂	"	1275	179	179	179	175	88	105	123	116	126	130	102	130	734
Average...	1361	183	182	182	178	92	111	127	121	129	134	110	134	736
Maximum...	1550	189	187	187	184	101	117	132	127	133	139	118	145	801
Minimum...	1275	177	178	178	174	86	105	122	116	122	130	101	125	721
Range.....	275	12	9	9	10	15	12	10	11	11	9	17	20	114
22698	♂	San Lorenzo	1000	181	178	178	167	80	90	118	116	118	120	96	119	674
22656	♂	"	1200	181	180	180	180	85	102	120	118	128	133	104	124	733
22653	♂	Monclova	....	183	181	181	171	90	103	122	116	120	122	127	127	702
Average...	1100	182	180	180	173	85	98	119	117	122	125	100	123	694
Maximum...	1200	183	181	181	178	90	103	120	118	122	128	104	127	702
Minimum...	1000	181	178	178	167	80	90	118	116	118	120	96	119	674
Range.....	200	2	3	3	13	10	13	2	2	10	13	8	8	59
22699	♀	Acaletta	1275	174	175	—	—	87	104	—	111	120	128	97	127	731
22700	♀	"	1125	167	168	—	—	84	98	—	108	115	122	98	121	736

TABLE I. DOLICHOCEPHALI.—Continued.

MUSEUM NO.	PROJECTION OF HEAD.		HORIZONTAL CIRCUM-FERENCE.	HORIZONTAL ARCS.		VERTICAL TRANSVERSE CIRCUM-FERENCE.	TRANSVERSE ARCS.				LONGITUDINAL ARCS.			FORAMEN MAGNUM.	
	ANTERIOR.	POSTERIOR.		PRE-AURICU-LAR.	POST-AURICU-LAR.		FRONTAL.	DIAGNATIC.	PARIETAL.	OCCIPITAL.	FRONTAL.	PARIETAL.	OCCIPITAL.	LENGTH.	WIDTH.
22644	98	104	509	242	267	421	267	284	305	259	125	118	125	36	28
22645	103	106	526	233	293	441	277	309	318	285	123	135	129	40	37
22646	102	93	511	240	271	452	287	301	315	263	128	133	110	34	34
22697	96	101	509	245	264	437	281	287	305	263	121	123	116	35	29
22698	107	91	502	249	273	420	271	281	302	267	121	127	112	35	30
22701	102	105	515	240	273	430	289	297	317	268	131	128	124	34	31
22702	96	88	502	236	266	427	286	293	305	250	123	127	112	33	31
22823	100	99	502	235	267	427	279	287	305	261	122	122	122	36	30
22846	102	97	498	236	262	414	279	283	293	256	120	122	112	35	30
Average.....	101	98	508	237	271	429	280	291	306	264	124	125	118	35	31
Maximum....	107	106	526	245	293	452	289	309	318	285	131	133	129	40	37
Minimum....	96	88	498	229	262	414	267	281	293	250	120	118	110	33	28
Range.....	11	18	28	16	31	38	22	28	25	35	11	15	19	7	9
22648	—	—	477	225	252	390	245	218	270	215	114	126	115	32	26
22656	97	97	493	225	268	408	265	280	304	253	125	129	118	32	27
22693	—	—	—	224	—	405	233	273	—	—	110	132	114	37	34
Average.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum....	—	—	485	225	260	401	258	267	287	252	116	129	116	34	29
Minimum....	—	—	493	225	268	408	265	280	304	258	125	132	118	37	34
Range.....	—	—	477	221	252	390	245	218	270	245	110	136	114	32	26
22699	—	—	16	1	16	18	20	32	31	13	15	6	4	5	8
22700	—	—	477	222	—	414	267	281	301	217	119	132	110	33	30
	—	—	471	217	—	391	219	265	290	242	115	125	117	32	26

TABLE I. DOLICHOCEPHALI.—Continued.

MUSEUM NO.	ANGLES.			TRANSVERSE DIAMETERS OF FACE.						HEIGHT OF FACE.	HEIGHT OF MALAR.	HEIGHT OF ALVEOLUS.	AURICULO-ORBITAL LENGTH.	OF ALVEOLUS.		
	FACIAL, OPHTHALMO-SPINAL.	Of DAUBENTON.	BASILAR.	NASO-MALAR.	BIZYGOMATIC.	BUCCAL.	INTER-MALAR SUPERIOR.	INTER-MALAR INFERIOR.	INTER-ORBITAL.					BASI-NASAL LENGTH.	BASI-ALVEOLAR LENGTH.	GNATHIC INDEX.
22644	71°	12°	23°	131°	126°	112°	56°	89°	24°	100°	95°	21°	67°	103°	97°	942
22645	70°	5°	18°	137°	140°	125°	55°	95°	22°	100°	80°	25°	65°	103°	103°	1000
22646	74°	10°	21°	126°	140°	123°	57°	100°	27°	99°	33°	19°	70°	111°	101°	910
22697	72°	1°	13°	127°	131°	118°	51°	98°	22°	96°	32°	19°	70°	101°	97°	960
22698	73°	4°	12°	—	—	—	—	—	24°	95°	29°	22°	65°	101°	107°	1029
22701	68°	0°	12°	135°	135°	117°	52°	100°	23°	99°	30°	22°	71°	100°	102°	1020
22702	73°	—	10°	130°	137°	112°	—	—	22°	—	23°	18°	64°	101°	96°	950
22823	73°	9°	20°	134°	127°	112°	53°	97°	24°	91°	26°	20°	67°	105°	100°	952
22823	73°	—	20°	134°	127°	112°	53°	97°	24°	91°	26°	20°	67°	105°	100°	952
22816	67°	10°	21°	139°	128°	114°	59°	94°	23°	100°	30°	21°	69°	102°	100°	980
Average.....	71°	5°	17°	132°	134°	117°	55°	98°	23°	98°	29°	21°	68°	103°	100°	971
Maximum....	74°	—	23°	139°	140°	125°	59°	100°	27°	100°	33°	25°	71°	111°	107°	—
Minimum....	67°	—	10°	126°	126°	112°	51°	94°	22°	91°	23°	18°	64°	100°	96°	—
Range	7°	—	13°	13°	14°	13°	8°	6°	5°	9°	10°	7°	7°	11°	11°	—
22648	—	—	—	143°	131°	114°	56°	—	23°	—	26°	—	67°	—	—	—
22656	68°	3°	13°	135°	125°	108°	—	—	23°	91°	25°	—	69°	97°	97°	1000
22693	67°	10°	19°	139°	—	—	—	—	23°	—	24°	—	—	—	—	—
Average.....	68°	7°	16°	139°	128°	111°	—	—	23°	—	25°	—	68°	—	—	—
Maximum....	68°	10°	19°	143°	131°	114°	—	—	—	—	26°	—	69°	—	—	—
Minimum....	67°	3°	13°	135°	125°	108°	—	—	—	—	24°	—	67°	—	—	—
Range.....	1°	7°	6°	8°	6°	6°	—	—	—	—	2°	—	2°	—	—	—
22699	—	—	—	—	—	95°	—	—	21°	—	19°	15°	62°	91°	83°	912
22700	—	—	—	—	—	95°	—	—	20°	—	21°	13°	61°	89°	85°	955

TABLE I. DOLICHOCEPHALI.—Continued.

MUSEUM NO.	OF PALATE.			OF ORBIT.			OF NASAL APERTURE.			NASAL BONES.				
	LENGTH.	WIDTH.	INDEX OF WIDTH.	WIDTH.	HEIGHT.	INDEX OF HEIGHT.	HEIGHT.	WIDTH.	INDEX OF WIDTH.	LENGTH-MEDIAN.	LENGTH-LATERAL.	WIDTH-AT ROOT.	WIDTH-MINIMUM.	WIDTH AT FREE EDGE.
22644	55	66	120	38	35	921	57	29	509	29	29	15	10	22
22645	54	66	122	40	37	925	55	30	545	26	25	11	10	21
22646	56	70	125	41	35	854	57	27	474	26	29	11	12	20
22797	55	64	116	38	35	921	56	26	464	—	24	11	9	16
22698	54	63	117	38	33	868	51	28	519	—	26	14	13	22
22701	56	61	109	38	36	917	53	23	418	—	29	12	9	18
22702	—	—	—	41	36	878	53	25	472	25	27	11	10	18
22823	55	65	118	38	37	974	50	26	520	—	26	13	10	16
22846	56	65	116	37	34	919	54	24	444	24	31	11	7	16
Average...	55	65	118	39	35	897	54	26	481	26	27	12	10	19
Maximum...	56	70	125	41	37	—	57	30	—	29	31	15	13	22
Minimum...	54	61	109	37	33	—	50	23	—	24	24	11	7	16
Range	2	9	16	4	4	—	7	7	—	5	7	4	6	6
22648	—	—	—	37	35	946	48	25	521	—	—	12	9	—
22656	52	62	119	37	34	919	52	28	535	—	—	13	8	—
22683	—	—	—	39	34	872	—	—	—	—	—	13	—	—
Average...	—	—	—	38	34	895	50	27	530	—	—	13	9	—
Maximum...	—	—	—	39	35	946	52	28	535	—	—	13	9	—
Minimum...	—	—	—	37	34	872	48	27	531	—	—	12	8	—
Range	—	—	—	2	1	71	4	1	4	—	—	1	1	—
22689	40	63	158	34	34	1000	43	23	535	—	—	—	—	—
22700	42	56	133	33	32	970	40	23	575	—	—	—	—	—

MASTOID LENGTH.

TABLE II. MESATICEPHALI.

MUSEUM NO.	SEX.	LOCALITY.	CAPACITY.	LONGITUDINAL DIAMETERS.			TRANSVERSE DIAMETERS.						INDEX OF BREADTH.	INDEX OF HEIGHT.
				GLABELLO- OCCIPITAL.	OPHTHALMO- OCCIPITAL.	OPHTHALMO- MAXIMAL.	OPHTHALMO- MINIMAL.	STEPHANIAE.	DI-MASTOID.	DI-AURICULAR.	TEMPORAL.	MAXIMUM.	ASTERIAC.	
22649	♂	San Lorenzo	1600	187	184	179	97	120	118	117	132	138	120	139
22657	♂	"	1300	183	178	175	92	108	123	116	128	134	104	112
22658	♂	"	1475	185	184	174	93	116	130	128	133	139	110	135
22701	♂	Coyote	1500	183	181	173	92	116	129	124	134	138	109	136
22827	♂	"	1450	184	180	173	92	105	125	123	—	137	103	137
Average...	1465	184	181	176	93	113	125	122	132	137	110	138
Maximum..	1600	187	184	179	97	120	130	128	134	139	120	142
Minimum..	1300	183	178	173	92	106	118	116	128	134	104	135
Range.....	300	4	6	6	5	14	12	12	6	5	16	7
22655	♂	San Lorenzo	—	177	176	170	93	—	125	120	126	133	100	129
22650	♂	"	1425	182	180	174	92	115	122	125	135	139	108	132
22651	♂	"	1425	174	174	172	91	115	121	119	127	136	109	134
Average...	1425	178	177	172	92	115	123	121	129	136	106	132
Maximum..	—	182	180	174	93	—	125	125	135	139	109	134
Minimum..	—	174	174	170	91	—	121	119	126	133	100	129
Range.....	—	8	6	4	2	—	4	6	9	6	9	5
22654	♀	San Lorenzo	1225	163	163	—	90	105	—	103	122	127	100	122

TABLE III. BRACHYCEPHALI.

22647	♂	San Lorenzo	1325	177	173	169	92	105	133	136	140	145	113	135	838	780
22653	♀	San Lorenzo	1200	165	164	161	87	111	130	116	126	132	96	126	805	708

TABLE II. MESATICEPHALI.—Continued.

MUSEUM NO.	PROJECTION OF HEAD.			HORIZONTAL CIRCUM- PERENCE.			HORIZONTAL ARCS.			TRANSVERSE ARCS.				LONGITUDINAL ARCS.			FORAMEN MAGNUM.	
	ANTERIOR.	POSTERIOR.	TOTAL.	HORIZONTAL	PRE-AURICU- LAR.	POST-AURICU- LAR.	PRE-AURICU- LAR.	POST-AURICU- LAR.	VERTICAL TRANSVERSE CIRCUM- PERENCE.	FRONTAL.	BREGMATIC.	PARIETAL.	OCCIPITAL.	FRONTAL.	PARIETAL.	OCCIPITAL.	LENGTH.	WIDTH.
22649	102	114	216	519	238	283	288	288	458	297	314	335	275	129	133	—	—	30
22657	—	—	—	505	238	267	267	267	434	287	300	314	250	134	128	111	34	29
22658	107	100	207	511	238	273	273	273	443	263	302	317	270	132	125	123	37	37
22731	100	101	201	514	240	274	274	274	442	282	297	315	270	125	122	120	41	35
22827	94	103	197	508	236	272	272	272	430	283	295	313	265	130	133	115	38	31
Average.....	101	105	205	511	238	273	273	273	441	282	302	319	266	130	128	117	38	32
Maximum....	107	114	216	519	240	281	281	281	458	297	314	335	275	134	133	123	41	37
Minimum....	94	100	197	505	236	267	267	267	430	263	295	313	250	125	122	111	34	29
Range.....	13	14	19	14	4	14	14	14	28	34	19	22	25	9	11	12	7	8
22655	—	—	—	497	232	265	265	265	426	276	287	306	263	112	122	115	35	31
22650	97	99	196	503	237	266	266	266	436	286	298	310	258	128	112	118	40	32
22651	97	96	193	494	220	274	274	274	422	274	289	316	266	133	132	112	35	31
Average.....	97	98	195	498	230	268	268	268	428	279	291	311	262	121	122	115	37	31
Maximum....	—	99	196	503	237	274	274	274	436	286	298	316	266	128	132	118	40	32
Minimum....	—	96	193	491	220	265	265	265	422	274	287	306	258	112	112	112	35	31
Range.....	—	3	3	9	17	9	9	9	14	12	11	10	8	16	20	16	5	1
22654	—	—	—	461	128	—	—	—	396	248	276	305	250	110	116	106	39	30

TABLE III. BRACHYCEPHALI.—Continued.

22647	99	95	194	504	231	273	273	273	450	278	297	310	258	121	126	117	35	32
22653	100	86	186	473	218	255	255	255	411	268	278	296	250	116	123	102	33	30

TABLE II. MESATICEPHALI.—Continued.

MUSEUM NO.	ANGLES.				TRANSVERSE DIAMETERS OF FACE.						HEIGHT OF ALVEOLUS.	OF ALVEOLUS.		
	OPHTHALMO-SPINAL.	OF DAUBENTON.	BASELAR.	NASO-MALAR.*	DIZYGOMATIC.	BUGAL.	INTERNAL SUPERIOR.	INTERNAL INFERIOR.	INTERORBITAL.	HEIGHT OF FACE.		BASE-NASAL LENGTH.	BASE-ALVEOLAR LENGTH.	GONATHIC INDEX.
22649	69°	—	—	131°	132	117	56	53	21	101.	26	102	101	960
22657	68°	5°	21°	—	—	—	—	—	24	89	27	104	104	—
22658	68°	5°	17°	130°	138	119	58	96	22	100	25	103	107	1081
22791	68°	6°	14°	134°	133	119	57	99	25	96	29	106	97	912
22827	68°	6°	14°	134°	133	119	57	99	25	96	29	106	93	930
Average.....	68°	6°	19°	132°	134	118	57	96	23	97	26	102	100	980
Maximum....	68°	6°	21°	131°	138	119	58	99	25	101	29	104	104	107
Minimum.....	66°	5°	14°	130°	132	117	56	93	21	89	24	99	93	—
Range.....	2°	1°	10°	4°	6	2	2	6	4	12	5	5	14	—
22655	73°	—	19°	—	128	114	50	89	22	90	22	102	96	—
22650	69°	8°	19°	133°	120	107	51	92	21	88	24	97	96	941
22651	—	—	—	136°	—	—	—	—	—	—	—	—	—	990
Average.....	71°	8°	19°	135°	124	109	51	91	22	89	24	100	96	960
Maximum....	73°	—	—	136°	128	111	51	92	22	90	27	102	102	990
Minimum.....	69°	—	—	133°	120	107	50	89	21	88	22	97	—	941
Range.....	4°	—	—	3°	8	4	1	3	1	2	5	5	—	49
22654	—	—	—	—	—	—	—	—	21	—	20	87	85	977

TABLE III. BRACHYCEPHALI.—Continued.

22647	70°	8°	21°	135°	143	122	53	99	23	95	28	22	66	101	99	980
22653	68°	5°	15°	136°	121	107	51	90	21	87	23	17	65	95	99	1012

TABLE II. MESATICEPHALI.—Continued.

MUSEUM NO.	OF PALATE.			OF ORBIT.			OF NASAL APERTURE.				NASAL BONES.					MASTOID LENGTH.
	LENGTH.	WIDTH.	INDEX OF WIDTH.	WIDTH.	HEIGHT.	INDEX OF HEIGHT.	HEIGHT.	WIDTH.	INDEX OF WIDTH.	LENGTH. MEDIAN.	LENGTH. LATERAL.	WIDTH. AT ROOT.	WIDTH. MINIMAL.	WIDTH AT FREE EDGE.		
92649	54	63	117	41	39	951	55	25	455	28	29	14	9	15	34	
92657	59	70	119	39	36	925	44	28	—	10	25	15	12	—	37	
92658	55	64	116	39	36	923	56	31	533	26	27	12	10	6	37	
92791	51	63	117	38	35	921	55	26	473	—	—	13	11	19	33	
92827	51	63	117	38	35	921	55	26	473	—	—	13	11	—	37	
Average...	56	65	117	39	37	949	53	28	528	27	27	14	11	13	36	
Maximum...	59	70	119	41	39	925	56	31	—	28	29	15	12	19	37	
Minimum...	51	63	116	38	35	—	44	25	—	26	25	12	9	6	33	
Range	5	7	3	3	4	—	12	6	—	2	4	3	3	13	4	
92550	—	—	—	42	36	897	—	—	—	—	—	—	—	—	39	
92550	51	58	114	37	36	973	52	23	442	24	23	13	9	18	34	
92551	53	63	119	37	35	946	49	23	469	25	24	9	8	19	33	
Average...	52	64	117	39	36	923	51	23	451	25	24	11	9	19	32	
Maximum...	53	63	119	42	36	—	52	—	—	25	24	13	9	19	31	
Minimum...	51	58	114	37	35	—	49	—	—	24	23	9	8	18	29	
Range	2	5	5	5	1	—	3	—	—	1	1	2	1	1	5	
92551	44	61	139	36	34	944	42	21	500	—	—	—	—	—	—	

TABLE III. BRACHYCEPHALI.—Continued.

92617	55	—	—	41	37	902	53	27	509	28	27	13	10	18	37
92653	53	60	113	37	34	919	47	25	532	—	—	9	9	—	28

THE WHITE BUFFALO FESTIVAL OF THE UNCPAPAS.

BY ALICE C. FLETCHER.

A MAN¹ who kills a white buffalo is considered to have received a blessing from the gods, and an evidence of their favor and recognition. The white buffalo is rare and generally remains near the centre of the herd, which makes it difficult of approach. It is therefore considered as the chief or sacred one of the herd, and it is consequently greatly prized by the Indians.¹ Owing to the scarcity of the white buffalo, an interval of many years usually passes before one is captured.

In order to keep the hides the hunter must have four sons. If the man who kills the white buffalo has four sons and yet is not able himself, or with the assistance of his relatives, to provide the feasts and presents necessary for the full enjoyment of the

¹ The Yankton, Teton, Santee, and Sisseton Indians, consider it a grave responsibility to kill a white buffalo, and it is almost feared, on account of the implied obligation to fulfil the rites pertaining to it. Among the Omahas there is the skin of a white buffalo preserved in a pack kept in a sacred tent under the charge of a specially appointed or consecrated person. This skin was only exposed at the great festival, which was held annually, during the summer, when the tribe was out on the regular hunt. These ceremonies, however, are no longer observed owing to changes incident to the history of the people and their advance toward civilization. White animals are generally regarded as consecrated, and are connected with religious observances, as the White Dog of the Onondagas, White Bear of the Zuni, etc.

² Through the kindness of Rev. A. L. Riggs I learn that among the bands of Eastern Sioux living near Fort Sully, D. T., a feast, called "the re-appearance of the White Buffalo Skin," is held for the consecration of a girl on her arriving at puberty. The feast is sacred and costly and not every one can afford it. Those who have once made the feast become privileged guests at every such feast, occupy the feast tent, and are served first. A prominent feature in the feast is the feeding of these privileged persons and the girl in whose honor the feast is given, with choke cherries, as the choicest rarity to be had in the winter. The feast can be held at any time. Bull-berries or as the Dakotas call them, "rabbits'-noses," may be substituted, or finely pounded meat mixed with fat, in case no berries are to be had. In the ceremony, a few of the cherries are taken on a spoon and held over the sacred smoke, then fed to the girl. The spoon is filled anew, incensed as each person is fed. As each one is given the cherries he is addressed thus:

"Wi-ca-'sa ya-ta-pi wo-yn-te de ya-tin kte." ("You will eat this chief's food.")

The eaters are not chiefs, only partake of chiefs' food.

This feast of the White Buffalo differs from that described in the text. The Ogallala feast is also different, judging from the little I have as yet gathered. Further research will, it is to be hoped, serve to elucidate the meaning of these varied feasts, and also reveal their common source.

privileges the ownership of the buffalo entitles him to, or if for any reason he desires to forego the honor, he may barter the hide which is highly valued. One was recently exchanged for three horses and a mule (equal to between one and two hundred dollars). The news of the capture of a white buffalo soon spread beyond the limits of a tribe, and proposals for its purchase are often received from remote points. Sometimes promises to surrender it are exacted beforehand.

Among the Unepapas the securing of a white buffalo demands from its owner the following rites.

First, the hide must be tanned. For the performance of this duty the owner of the skin selects a virgin and bids her come to the tent set apart for the preliminary ceremonies. He also invites the head men of his gens, they being men of good repute, and has a great feast prepared. A priest or "wakan-man" must be present to fill the pipe, and recite the prayers of the ritual. A handsome suit of clothing consisting of dress, belt, leggings, moccasins, earrings and paint is presented by the owner of the skin to the young girl who is to tan it, and he also presents her with a horse.

Upon her arrival at the tent, after having put on the new dress, a red or dark blue cloth is spread on the floor, and upon it the buffalo skin is laid with the hair side down. Then with her scraper the girl removes the fleshy bits adhering to the skin, while the owner and his guests carefully watch that the skin may not be cut or broken. All the bits which she scrapes off are put into a new white, blue or black blanket which has never before been used, care being taken that none of the bits touch the ground. A soup is made by adding the scrapings of the hide with some choke cherries to a pot of boiling water. None of this soup must be thrown away or lost, but all must be eaten by the men within the tent.² When the scraping is completed, the ground of the tent is covered with *Artemisia*,³ on which a new blanket is laid, and the buffalo skin spread out.

² It is not uncommon to make soup of the scrapings of hide and the addition of cherries gives a favorite flavor. I have often met the dish prepared as described in the text. It is also an Indian custom to eat all that is provided. Except in the care taken to prevent any of the scrapings falling on the ground and treasuring them in a new blanket, there is nothing unusual in the rite described.

³ *Artemisia* is used in all the religious festivals I have seen or learned of, and it always is supposed to purify and take away any ill effects which may have been received, and ward off harm. Once two children were playing, a boy and his sister,

The next day the owner prepares a second feast, and again the men are invited. The girl on arriving at the tent is presented with a second outfit similar to the first. She then rubs the skin with a mixture of buffalo liver and brains, and carrying it outside the tent stretches and fastens it to a square frame prepared for it, being careful to place the head toward the east. The men then rise and leave the tent, going out by the left⁴ (the opening of tent being towards the east). After a time, passing by the right, they re-enter the tent, and the hide is brought in and placed at the back or west side of the tent. The entrance of the tent must be kept closed during all the ceremonies which take place within it.

Two, three, or four "good men" —that is, "not quarrelsome" men —are designated to remain in the tent to watch the hide as it dries. For this service they receive many presents of goods and horses. The hide after it is dry is spread on a new blanket with the head to the east, and a line is drawn from the left shoulder to the right leg crossing one drawn from the right shoulder to the left leg, and thus forming the cross, the sign of the four winds.⁵ Men of high character are chosen, who placing poles above and beneath the skin turn it over, being careful not to touch it with their hands. Then a priest paints upon it between the shoulders a series of concentric red circles using his finger as a brush. This figure is placed on the fur side and is said to represent the Indian camp⁶

and the little girl, in seeking for a hiding place, ran into one of the sacred tents, which must never be touched, or irreverently entered. Her brother searched long to find her and at last he thought of the tent, into which he peeped, and there sat the little maid complacently in the centre of the sacred place, unmindful of any wrong. He called her out, and, when they went home, told his mother of what had happened. She was much disturbed and took her little daughter at once to the wife of the man who kept the tent, and the two women washed the child and wiped her with artemisia. In the same way horses are wiped off and so protected from the evil consequences which would follow when they have accidentally run against sacred articles. I have seen girls who came to a religious festival to give thanks for their recovery from illness, thus wiped with artemisia by a priest. The herb is spread about during certain rites to ward off harm, as when the address to the stones was made, during religious exercises.

⁴ The ceremonial entrance into a lodge or enclosure is by the left, and the exit by the right. In social life, however, one does not pass between one's host and the fire. One always goes out by the right, *i. e.*, the north side of the fire. All tents generally face or open to the east.

⁵ This sign of the cross, made by connecting diagonally opposite corners, as well as connecting points opposite to each other, so that the two lines shall intersect at right angles, making the figures X and +, are drawn upon skins and marked upon surfaces, and used in decorating pottery, baskets, mats, etc., but whenever seriously drawn by the Sioux invariably represent the four winds.

⁶ The concentric circles are found in various parts of our country, carved upon shells, upon the rocks, and even represented in some of the ancient earthworks, such as that at Portsmouth, figured by Squier and Davis, Plate XXVIII, Group *a*. But I would not imply that they are all susceptible of this explanation given me by these Indians.

fires. (See fig. 1, e.) The priest while painting prays to the powers of earth and sky and remembers all things that grow.

One of the watchers cuts a pole which is laid upon sticks so as not to touch the ground, and no one must step over it.⁷ The owner of the hide must trim the pole and paint it in four lengthwise stripes, using a mixture of red paint and of fat from the heart of the white-buffalo, after which it is carried by the sticks, as on a litter, to the place where the final ceremonies are to be performed.

For this occasion a circle of about 30 or 40 feet diameter is formed by a wall of boughs thickly interlaced (fig. 1, s), leaving a small opening at the east. While the pole is being erected in the centre (fig. 1, a) prayers are said by the officiating priest. All the special ceremonies, as the filling of the pipe, drawing the diagrams, preparing the earth, etc., are accompanied by a ritual of words, and it is believed that should the person saying it make a mistake or omit a word, he would incur death from the sacrilege.

West of the pole the sod is removed from a square of about five feet (fig. 1, c) leaving the brown earth exposed which is mellowed and made fine.⁸ The sods thus removed are piled at the foot of

⁷ To step over a pole set apart for any religious service is a grave misdemeanor. The Sun-dance pole must not be stepped over or unduly handled, and it is carried on a litter of sticks from the woods to the grounds. Poles for sacred purposes are sometimes set and arranged without the hand coming in contact with the wood. Among the Omahas the sacred pole is not to be touched. The White Buffalo Hide, when once dressed, it will be observed, was treated in the same manner, turned by means of sticks, not handled. "Touch not" is the Indian rule for sacred articles, as applied to the people.

⁸ Here again is the exposure of the unappropriated earth, from which the power of life has not yet been drawn out into vegetative forms. This U-ma-ne, as the Dakotas call it, is needful to secure the hearing of the address by the life-giving power of the earth, which is appealed to. All the sacred articles are placed upon it: the skull, hide and black earth. From the earth thus made visible powers of various kinds are desired, as strength, good fortune, foretelling the future, and success in many ways is secured. The custom of mellowing the earth seems to have been widely extended. The following myth belonging to the Mus-co-gee Indians and given me by one of their number. Mr. G. W. Grayson, has its poetry enhanced by recalling the use of the "U-ma-ne," the meaning of the colors, and the sacredness of the ritual songs and their power; for, as an old priest said to me, "the music comes from beyond this life." The "Subbea" is a sort of amulet or charm, a small brilliant stone, not much larger than a good-sized pin-head. This is wrapped in a piece of buckskin and securely fastened to some part of the person. Among many tribes the hair is the place where such charms are usually worn, the sacred article being tied in the braids.

"The Song of the Subbea is very sacred and held in great veneration by the initiated and under no circumstances is it ever sung to gratify curiosity. It was given to the Indian in this manner. Long ago a hunter had wandered far in a solitary place; for days he walked through the solemn woods, sleeping at night at the foot of a tall tree, and rising in the gray dawn to pursue his lonely way. Not an animal crossed his path. Even the

the pole towards the east (fig. 1, *b*). A skull of a buffalo is placed in the centre of the square of exposed earth (fig. 1, *c*), and on the forehead of the skull is painted a figure as represented in fig. 1, *d*. This is said to be a prayer which remembers the powers of earth, wind, sun, water and the buffalo. The priest makes four circles about the skull from left to right with a bunch of *Artemisia* held in his right hand thrusting the plant into the left eye socket, repeating the motion with a second bunch which is placed in the right eye socket, and a third which is placed in the cavity of the mouth⁹ (fig. 1, *c*).

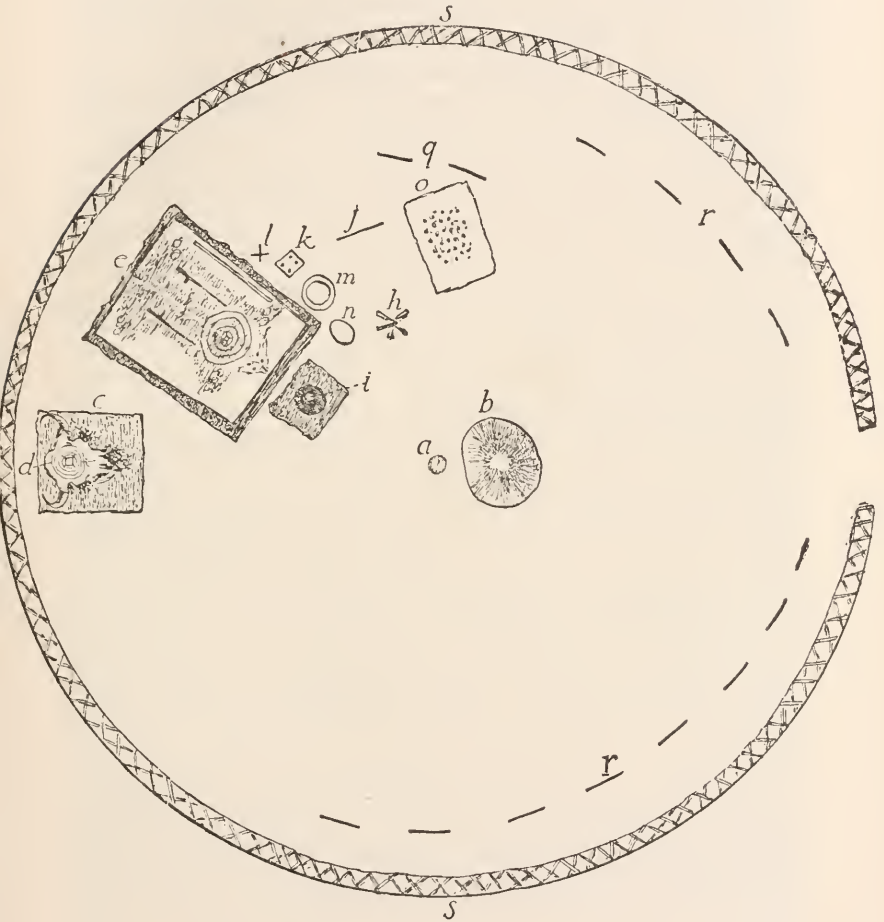
birds were rare; only the leaves, as they replied to the passing breezes, broke the silence that girdled the man. On, on, he walked, through deep ravines, where overhead the trees clasped each other and shut out the light; up he mounted over hill sides, but could not escape the forest or meet with any living creature. At last he found himself high up upon a mountain-side in a more wild and solitary place than any spot he had ever seen. The weird silence, the untrampled herbage, the lofty height and cloudless sky filled him with superstitious awe, and a dread feeling that he was the first human being to look upon this solemn grandeur stole over him, and he stood reverently facing the unseen and unknown powers of nature, feeling his helplessness and poverty. As he stood thus, a gentle breeze seemed to touch him softly, and he thought that he heard something like a human voice. He started to move away, but again he heard the voice, this time more distinctly. He listened; the voice grew clearer. Astonished and awestricken, he seemed rooted to the spot, hearing a low, sweet voice, singing a song that seemed to enter into his soul and captivate it. The song was repeated, and soon he felt that he could never forget it, that it was all his own, given to him by a god. He eagerly peered about to see whence the voice had come. Not far from where he was standing he saw a *circular plot of ground, with every vestige of grass or other vegetation carefully cleared away as by the hand of man, in the centre of which stood a little plant of ordinary appearance, bearing a blue flower, swaying gracefully to and fro and sweetly singing the song of the Subbea*. He now knew that great good fortune had come to him, and that the potency of the song he could impart to the little stone, the Subbea, by singing this song over it as only one so initiated could sing it. Thus the song of the Subbea was given to man and its mysterious power conveyed to the charms so secretly kept and carried and relied upon as circumstances seemed to demand. Among the effects the Subbea can produce are the following: the possessor can cause any one of the opposite sex to become so absorbingly enamoured as to brave all ridicule or censure and yield completely to his will. Again, success will follow the pursuit of game; this too will yield to the power of the charm, and no one can equal the fortune of the fortunate possessor. Again, when the possessor journeys in a strange land or attends a large gathering of people, the charm will make the owner attractive and acceptable, and thus success will attend all his dealings. To fully secure all the powers, and the results which belong to the Subbea, the owner must 'intelligently carry it,' which means he must accept, without doubting, the belief that the charm will be potent. Those who possess this rare charm are often unwilling to acknowledge it and desire to keep it secret. Any person known to have one is usually avoided by women who fear lest they may fall victims to its power."

These old fables and superstitions are fast fading away and one has to search among the old people to gather them for preservation; "so that," to quote my Indian friend, "when we have all passed away those coming after us may see and remark that men and women have been here before us."

⁹ The form painted upon the buffalo skull differs some from that put upon the skull in the sun-dance, although the central figure has the same meaning with that on the sun-dance skull and resembles it. The sage is in both cases used with the same ceremonial, and has the same meaning, closing the orifices with that which will ward off harm.

A larger excavation is similarly made a little distance to the north of the skull (fig. 1, *e*), lined with Artemisia and covered with a new blanket on which the buffalo hide (fig. 1, *g*) is laid with

FIG. 1.



Arrangement within enclosure of boughs.

the head toward the pole. Between this and the pole, about two feet square of earth is prepared by removing the sod and mellowing the soil. In the centre of this square a small heap (fig. 1, *i*)

of a peculiar black earth¹⁰ is transferred from a new blanket and covered with a red cloth.

Gifts to be distributed by the owner of the hide are laid at the leg flaps of the skin all being pointed toward the black earth. Should moccasins be among the offerings the toe must be directed that way. Near the head of the hide is laid an eagle feather war bonnet. Upon each side of the hide (fig. 1, *g*) are laid the two pipes, their stems decorated with porcupine quill work, which, after having been filled with appropriate ceremony, have had their bowls sealed with red paint and fat from the buffalo's heart. To the north of the hide is placed a wooden plate (fig. 1, *m*) about a foot in diameter which may be made from the ash, cottonwood, box elder, or hackberry tree, and laid beside it a spoon fashioned from the horn of the Rocky Mountain sheep.¹¹ Behind the plate is thrust in the ground a stick, having the upper end split at right angles, and four tufts of down inserted (fig. 1, *l*) to represent the four winds.

The priest (fig. 1, *j*) sits beyond the plate to the north. At his right hand is a small square board (fig. 1, *k*) having on it down, colored red. Before him, a little to the left, a blanket (fig. 1, *o*) is spread on which is put a heap of "choke cherries;" directly in front of him are laid a few live coals (fig. 1, *h*) and sweet grass dropped on them to smoulder.¹² To the right is set a wooden dish painted red, and containing water (fig. 1, *n*). A few feet to the left of the blanket containing the cherries sits an assistant; later this place is occupied by a near relative of the owner of the hide, who is placed between this man and the priest but a little back of them (fig. 1, *q*). Around the sides of the enclosure, excepting that portion at the west back of the buffalo skull, sit the chiefs (fig. 1, *r*) of the tribe, each one in his ceremonial dress.

¹⁰ This black earth was described as resembling coal and being rare and difficult to find. It is always gathered from the sides of ravines, or where banks have fallen away exposing it. I am inclined to the opinion that it is pulverized lignite. During all the ceremonies of this Feast, blankets are mentioned as of different colors, and the red cloth put over the pile of black earth. I was told that formerly skins were used and they were painted in the colors mentioned, a skin painted all over red in place of red cloth.

¹¹ There are some superstitions connected with the horn of the Rocky Mountain sheep. It possesses among other powers that of keeping its owner from the temptation to tell a lie, which is counted a grave sin. Truth as to fact, being of the Indian's code of morals.

¹² The use of sweet grass or some aromatic shrub is found in all religious ceremonials of an elaborate character, smoke seeming to form a sort of medium, or perhaps, more properly, a messenger between the seen and unseen, the Indian and the god.

As each article is placed and arranged the action is accompanied with occasional chants having simple explanatory words. These chants form a part of the ritual of the festival.¹³

When all is in readiness the ceremonies begin by the priest lifting the spoon and slowly advancing it to the smouldering grass, stopping four times on the way, and then describing a circle from left to right through the smoke. He then approaches the pile of cherries, fills the spoon with them, and advances toward the plate in the same fourfold manner, circles it and places the cherries on the sunrise side. The ceremony of approaching the fire is repeated, and the cherries taken and the plate reached in the same ceremonial manner as the spoonfuls are placed successively on the south, west and north sides of the plate. After this action which is in honor of the four winds, the priest dips with the spoon the rest of the cherries from the blanket to the centre of the plate using no further ceremonial. When this is accomplished the spoon is again consecrated by the four approaches and circling of the smoke, and filled with water from the red dish. It is then raised toward the sun and lowered, and the plate approached by the full ceremonial, then circled, and the water poured over the pile of cherries on the eastern edge. In the same manner observing the detail of approaches to the fire, lifting of the water and reaching the plate, a spoonful of water is poured over the piles on the south, west and north sides of the plate.

The priest then consecrates his right hand in the smoke, using the same manner of approach and circle, and by a similar action reaches toward the board containing the swan's down and picks up a bunch with his thumb and forefinger, and advances in the same ceremonial way to the plate and places the down by the eastern pile where it adheres to the moistened edge of the plate. In this manner he transfers a tuft from the board to each of the piles on the south, west and north side of the dish, always first consecrating his hand and observing the ritual of motion. After this ceremony he advances both hands toward the smoke, extending his fingers, making the ceremonial pauses, and circling from left to right, after which he similarly approaches the dish, and grasps it with his right hand between the east and south pile of cherries, and

¹³ Every religious festival and every dance, and all the great events of life have songs or chants appropriate to each, as the Ritual Songs, the Song of a Vision, the Death Song. Many of these are traditional and originally received supernaturally.

his left hand between the west and north piles. Then he slowly rotates the plate, stopping at each point of the compass, turning from left to right and grasping the dish with his hands in the same relative places with each new movement. In this way he turns the plate completely around, bringing it back to its first position. The movement is a very steady and careful one, for none of the contents of the plate must be disturbed or lost.

The owner of the hide now rises and comes near the smouldering grass, and extends his hands toward and through the smoke in the same ceremonial manner, resting his hands for a moment in the smoke. He then passes his left hand down his right arm from the shoulder to the wrist, repeating the same motion with the right hand upon the left arm,¹⁴ then rising he goes toward the plate and grasps it in the same way the priest had done; and, holding it thus, he walks with it around the circle and then deposits it at the left cheek of the buffalo hide. Silence has been strictly maintained during this action, but as the plate is set down the company of chiefs bow their heads and cry with a loud voice "Hei-ya," which was explained to me as an ancient response meaning "we give thanks."

The owner of the hide resumes his seat and the priest extends both his hands toward the smouldering grass, making the four ceremonial stops and the circle. With his hands thus consecrated he makes the same ceremonial approach to a flat stick¹⁵ about two to three inches broad and three and a half feet long which lay at the left of the hide; taking up this stick he again approaches the smoke in the same manner and consecrates the stick. The red cloth is removed from the small heap of black earth and the priest with deep solemnity of manner makes the formal approach toward it holding the stick with both hands, the left hand in advance of the right. After circling the heap of black earth, he touches it first on the east, then on the south, west and north, leaving an impress at each touch. After this ceremony he spreads the pile so as to leave it about twelve or thirteen inches in diameter.

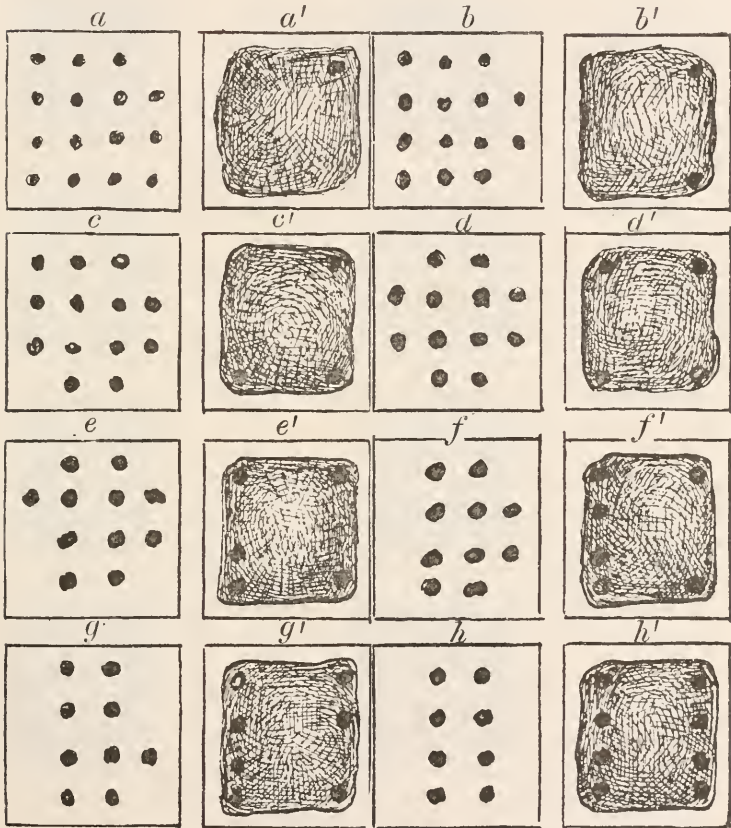
A near relation of the owner of the hide approaches, bringing with him two square pieces of board bound together by buckskin

¹⁴ This is the sign of giving thanks and is used on occasions of solemnity or grave importance.

¹⁵ One is reminded of the flat stick used by the Iroquois in the New Year festival, when two of the keepers of the faith entered each house and lifting ashes sprinkled the hearth, reciting a formula. (Morgan, *League of the Iroquois*, p. 211.)

thongs, and occupies the place of the assistant. Between these two boards are sixteen bunches of down, colored with red ochre and laid in four parallel lines, four bunches in a line. The down has been secured by the owner of the hide from the wild goose, and prepared by him for this solemn occasion. After loosening the strings about the board, the one in charge of it consecrates

FIG. 2.

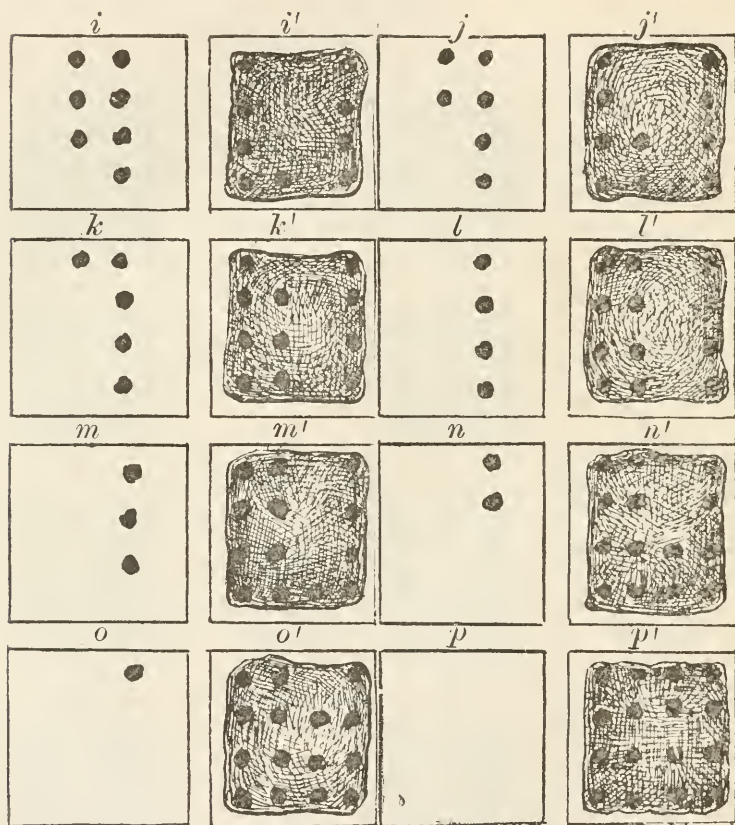


Showing the figures made in transferring the bunches of down from the board to the black earth.

his hands in the formal manner, and lifting off the upper board picks up with his right hand the bunch of down at the right hand end of the upper line (fig. 2, *a*), and passes it toward the priest,

who, after consecrating the stick, extends it to receive the down which is placed thereon, and the ceremonial advance is then made toward the black earth. On reaching it, one edge of the stick is used to make a circular hole¹⁶ on the eastern side of the earth, corresponding to the position on the board from which the tuft has

FIG. 3.



Showing the figures made in transferring the bunches of down from the board to the black earth.

been taken. The down is then 'dropped from the stick into the hole prepared for it (fig. 2, *a'*). This part of the ceremony is performed very slowly and carefully, as it is said to be one of the

¹⁶ The cuplike holes, made in the black earth, suggest a possible connection with those cut in rocks and their religious significance.

holiest acts of worship, and any accident, such as letting fall the down, or not making the hole in exact position and form, or not successfully transferring the down, would incur disaster and death. When the down rests in the black earth all the people bow their heads and cry, "Hei-ya." Again the male relative in charge of the boards consecrates his hand and picks up the bunch of down at the right hand end of the lower line (fig. 2, *b*). The priest consecrates the stick anew and the down is placed upon it and the earth reached in the ceremonial manner, and a circular hole made corresponding to the place whence the down was taken. When the down is put on the earth (fig. 2, *b'*), again the people bow their heads and cry, "Hei-ya." With the same elaborate detail, the tuft from the left hand end of the lower line on the board (fig. 2, *c*) is transferred to a hole similarly placed in the black earth (fig. 2, *c'*), the people responding to the action. The same ceremony attends the transfer of the tuft from the left hand end of the upper line (fig. 2, *d*) to a like position in the black earth (fig. 2, *d'*). At the completion of the four points those present lift up their hands, the palms elevated, and then bowing their heads lay their palms on the ground and cry, "Hei-ya."

Pursuing the same elaborate ceremonies the remaining twelve tufts are transferred from the board to the black earth, the people responding.

The diagrams (represented in figs. 2 and 3, *a* to *p*) will show the series of figures produced at each stage of the transfer, and the holes made in the black earth into which the down was placed.

It would be difficult to overestimate the seriousness and devoutness of the men during this portion of the recital. They declared over and over again, "this is very holy." After the ceremony had been completed they explained it as follows:

The black earth is the land which brings forth: it is the mother. The down and the red color obtained from the ochre are the representatives of living things; the fruits of the earth, and men, all of which live and rest on the earth. The four holes at the corners are the four winds which stand toward the land and hold health, and take away sickness. The holes between these four represent the progression of the people. To quote their exact words: "The old die, the new are born, and the race lives on forever. The white buffalo is the chief of the herd, and from the buffalo comes our animal food and this gives life and strength. We put the dish

with the cherries and water beside the head of the hide, because the buffalo likes these things, they make him to live. We eat the cherries and drink the water that there may be no end of fruit and water with us."

At the conclusion of the ceremony of the black earth, the priest turns to the owner of the hide and says, "Are you ready"? Then the owner rises and goes toward the plate, makes a circle from left to right turning the plate, and then stands holding the plate to the east. Then the priest drinks from the plate, and all the people cry "Hei-ya." The owner then goes round the circle and each chief eats of the cherries and drinks saying as he does so: "Wi ca'sa yatapi owasin," meaning "all the chiefs." The owner may not eat or drink as he is not yet a chief. When all have eaten and the plate emptied, it is put back beside the buffalo head.

Pounded buffalo meat is now brought in and the plate placed before the priest. After consecrating his hand four pinches of meat are successively offered to the four winds¹⁷ and placed upon the four sides of the dish. The four sons of the owner enter and sit at the left of the priest. When all is ready the priest again consecrates his hand in the formal manner, and takes up the pinch of meat at the eastern side of the dish and holding it up, says:

"Son, when men come to your tribe, give to them gifts,occasins, horses and other things; as I now give you this meat, it will go into your body and make you to live long, so you will help those who come to your people." The meat is then put into the child's mouth, who eats it. Again consecrating his hand, he takes the pinch of meat on the south side and, holding it, says to the second child:

"Son, if you are visiting a tribe, or are camping anywhere, and see an orphan child give him half of what you possess if it be ever so little; as I now give you this meat, it will go into your body and make you to live long, so you by your acts to the child will raise it up." Repeating the consecration of his hand and taking the pinch of meat from the western side raising it, he says to the third son:

"Son, if you are living in a good lodge and prospering, you must treat well (*i. e.*, entertain and give presents) all that come to your lodge, and children will be born to you; as I now give you

¹⁷ The usual form of asking a blessing upon food. The bit of meat or whatever the article may be, is, after the elevation, generally dropped in the fire, or buried. I never saw this ceremony omitted when living among Indians who retained their native religion.

this meat, it will go into your body and make you to live long, so children will be raised up to you, and they shall follow in the path of your father." Passing his hand through the smoke in the ceremonial manner, and taking the pinch of meat from the north side of the plate, raising it he says to the fourth son :

"Grandchild, if any of your relatives be wounded, make the smoke of sweet grass, so will you become head of the chiefs ; as I give you this meat, it will go into your body and cause you to live long, for in this way all my sons have been fed."

At the end of this ceremony kettles of food are brought in. The chiefs eat of the pounded meat. All the tribe are called to a feast outside the enclosure, and each one who comes paints his face red.

After the chiefs have eaten, the priest takes up the pipes and reciting a prayer presents them to the buffalo hide, then passes them through the smoke and removes the sealing of tallow and red paint from the bowls, and lights them from a coal brought by an attendant. They are handed to the owner of the hide who takes a few puffs, when they are passed around the circle of chiefs, one pipe following the other. When they are empty they are returned to their place beside the hide. With the aid of one of the chiefs the priest using a new knife cuts the hide lengthwise into three parts. The owner receives the centre strip, the chiefs present are given bands cut from the outside pieces. These bands are from six to eight inches wide. These are wound about the head and preserved as a life-long memento. This band secures to its owner good thoughts and good luck. It is kept in the personal pack with the man's best clothing, pipe and tobacco bag, the ornaments he wears on his head, and the animal skin which is the religious symbol of his vision.¹⁸ The articles contained in this pack were said to be worn on such occasions as "when many people come together, to dance and pray and hold up the pipes." This band from the white buffalo hide is never worn during war or in battle.

¹⁸ The skin of the animal of the kind seen in a vision, and which is the visible form of the answer to the religious appeal made to the supernatural powers, is always counted as one of the most, if not the most, sacred, of personal articles. It is only worn upon occasions of solemnity or great danger, as in war, or cases of necessity, as when searching for game in time of scarcity.

In one of the religious festivals of the Iroquois the following duties were enjoined : "If you tie up the clothes of an orphan child, the Great Spirit will notice it, and reward you for it." "To adopt an orphan and bring it up in virtuous ways is pleasing to the Great Spirit." "If a stranger wander about your abode, welcome him to your home, be hospitable toward him, speak to him with kind words." (*Hist. of Tuscarora Indians*, Elias Johnson, p. 37.)

After the distribution of the hide, the skull is brought from its "U-ma-ne" or spot of mellowed earth (fig. 1, *c*), and laid at the foot of the pole. The eagle war bonnet is broken up and scattered over it. A disk of shell is crushed to a powder¹⁹ and poured over the skull. A blue ornament resembling in shape the favorite "elk tooth" decoration called "the blue cloud," and said to be made from beads,²⁰ is also powdered and thrown upon the skull. The red cloth which was spread over the pile of black earth is buried with a disk of shell upon a hill near by, all the gifts laid at the feet of the hide and the pipes are given to the poor of the tribe. Presents of horses are made to the priests. The owner of the hide parts with all his clothing, steps forth from these initiatory ceremonies naked,²¹ and in this guise returns to his wife and children. The people at once contribute clothing to him, present him with a tent and he begins life anew. The pole is left standing. When it falls the man in whose honor it was raised, or his descendants, must give a feast to all the tribe.²²

¹⁹The powdering of a shell occurs also in the offerings about the pole of the sun-dance. One is reminded of the "praying powder" used by the Pueblo Indians, which is carried by them in baskets of pottery and sprinkled on the ground and on the feathered praying sticks during their religious ceremonies. These disks, so far as I have seen them, are made of marine shells.

²⁰The blue cloud I did not see, but from the account of it, it would seem to be of the manufacture described by Lewis and Clark as practised among a select few of the Ricaras and Mandans, and derived from the Snake Indians. (See pp. 125-126.)

²¹Nakedness is the sign of sore trouble, bereavement, great humility. In many ceremonies the laying aside of clothes is the symbol of a kind of self-abnegation. When the ceremony of piercing the ears of children takes place, the gaily dressed child is stripped of its clothing and this is then given away. The religious teaching and formulas of the Indian demand much giving away. In the absence of genuine commerce this becomes of great importance to the people, as a legitimate mode of exchange. When the Indians come in contact with our civilization it leads to misunderstanding and misfortune. Accumulation with the Indian is always for the purpose of disposing of his goods to secure honors, which, although they may be social, are all closely connected with religious forms; church and state being completely at one in the lower forms of society. This long habit, bred of religious custom, tends to what we denominate improvidence and shiftlessness, when practised in the midst of white environment, and this heredity of training is a factor to be considered by those who labor to civilize the Indians. The old priest said toward the close of his description of the festival, "Thus my grandfather did, thus he was made a holy chief, and his son after him, and I too, who am now an old man. They have told me that I must do thus to do right, and I try to do right and teach my children so that they may follow in the right way and live long."

²²The conferences at which the notes were taken from which I have written the foregoing account occupied three days, and during their continuance great care was taken to close the tent tightly, excluding all but the few chosen men, while guards were placed outside to prevent eavesdropping. The weather fortunately was fine; a storm would have broken the narrative probably irrevocably.

Throughout the camp a watchful interest, a superstitious dread prevailed, as it was known that sacred things were being revealed to me. The more conservative Indians were sure that punishment would follow the sacrilege.

When that point of the description was reached which referred to the black earth, the old priest, who was talking, was interrupted by one of the younger men, a person of unusual intelligence and vigor. He rose and with eyes fixed on mine advanced directly toward me and halting regarded me with the closest scrutiny. After an awe-inspiring silence he extended his hand in greeting. Then he said "We pray by these things and they are great. We never talk about the white buffalo skin except when we drink water at counsel feasts. You have tried to help us and you are the first and only person to hear of these things." I replied that from my heart I thanked them for what they told me, that the white people knew little of the Indians' religion and only the Indians could explain it. The more they told me the more I could help them.

The chief then told the men who were describing the ceremonial to be very careful not to make a mistake or miss a word lest evil befall them.

As I entered the chief's tent one day, one of the leading men came rapidly toward me naked and looked angry. Other Indians followed him into the tent. The priest said, "Evil has come to us!" An Indian repeated angrily, "Yes, evil has come to us of your talking." "My friends, what has happened?" I asked. "A woman was nearly drowned — this man" — pointing to the naked person who had followed me into the tent — "hardly saved her." Another man added, "A child nearly choked to death coughing." The men who had talked with me seemed troubled and embarrassed. The chief sat with his head down drawing figures on the earth with a stick. The other men were very angry. It was a critical moment, but rising and crossing the tent, I extended my hand to the naked man, saying: "Friend, it is *good* fortune, the woman did not drown, you saved her," and turning to the other man I added, "and the child got well." This new aspect of the case being borne out by the facts met with approbation, for the naked man accepted my hand and then resumed his clothing. The others all proffered me their friendship. In view of the supposed bad fortune only two men, who were, however, the most important ones, were willing to talk, and they thought it best to adjourn to some distance from the tent where we might be quite unobserved. They painted themselves for the occasion, with red on their faces and blue stripes on their hair. Their pipe was also freshly painted red.

Before resuming the narrative the two men seated themselves toward the sunrise, lit the pipe, bowed to the earth and passed it, uttering a prayer. They were very serious and anxious that no mistake should occur. They would not draw any diagrams but allowed me to draw some, and corrected my mistakes. The entire day was thus spent.

Most of two hours was consumed in making the diagram showing the transfer of the down from the board to the black earth. Every detail was acted out, not one omitted. At the close the younger priest said, "Look at me. I look at you and I shall never forget you. Look at me, you are never to forget me." Then as he paused for my reply, I said, "I am glad you will never forget me for you will remember the face of a friend, and I shall not forget you." Then rising he approached me and with great earnestness fastened his eyes upon me, saying, "Promise me that no harm shall come to me or my people because of what we have told you," and I said "I do not think any harm will come to you because you have talked to me." A second time he asked my promise and I made the same answer. Meanwhile the old priest sat bowed to the earth, and evidently reciting some formula. A third time, with increased earnestness the same assurance was asked and I made the same reply. Then coming still nearer and looking at me with an expression I can never forget, as it showed me how profoundly sacred had been their disclosures, he said: "Promise me by your God, that no harm shall come to me or to my people because I have spoken to you of these sacred things." I answered, "My friend, you ask me to promise you that which only God himself could promise. I will pray my God that no harm shall come to you or to your people because you have talked with me." Then extending my hand, which he took, this strange scene came to a close.

THE ELK MYSTERY OR FESTIVAL. OGALLALA SIOUX.

BY ALICE C. FLETCHER.

AMONG the Souan family of Indians there are societies, religious in character, which are distinguished by the name of some animal.¹ Each society has a ritual composed of chants and songs to be sung during different parts of the ceremonies, having words describing in simple and direct terms the act which accompanies the music. These musical rituals, it is often claimed, have been received in a mysterious or supernatural manner, and are therefore regarded as possessing a religious power. Every member is taught these songs after his reception into the society, and the music is thus handed down from generation to generation. Other songs are sometimes sung which have been composed by members

¹The Indian's religion is generally spoken of as a nature and animal worship. The term seems too broadcast and indiscriminate. Careful inquiry and observation fail to show that the Indian actually worships the objects which are set up or mentioned by him in his ceremonies. The earth, the four winds, the sun, moon and stars, the stones, the water, the various animals, are all exponents of a mysterious life and power encompassing the Indian and filling him with vague apprehension and desire to propitiate and induce to friendly relations. The latter is attempted not so much through the ideas of sacrifice as through more or less ceremonial appeals. More faith is put in ritual and a careful observance of forms than in any act of self-denial in its moral sense, as we understand it. The claim of relationship is used to strengthen the appeal, since the tie of kindred among the Indians is one which cannot be ignored or disregarded, the terms grandfather and grandmother being most general and implying dependence, respect and the recognition of authority.

One of the simplest and most picturesque explanations of the use of the varied forms of life in the Indian worship was given to me by a thoughtful Indian chief. He said: "Everything as it moves, now and then, here and there, makes stops. The bird as it flies stops in one place to make its nest, and in another to rest in its flight. A man when he goes forth stops when he wills. So the god has stopped. The sun, which is so bright and beautiful, is one place where he has stopped. The moon, the stars, the winds he has been with. The trees, the animals, are all where he has stopped, and the Indian thinks of these places and sends his prayers there to reach the place where the god has stopped and win help and a blessing."

The vague feeling after unity is here discernible, but it is like the cry of a child rather than the articulate speech of a man. To the Indian mind the life of the universe has not been analyzed, classified, and a great synthesis formed of the parts. To him the varied forms are all equally important and noble. A devout old Indian said: "The tree is like a human being, for it has life and grows, so we pray to it and put our offerings on it that the god may help us." In the same spirit the apology is offered over the slaughtered animal, for the life of the one is taken to supplement the life of the other; "that it may cause us to live," one formula expresses it. These manifestations of life, stopping places of the god, cannot therefore be accurately called objects of worship, or symbols; they appear to be more like media of communication with the permeating occult force which is vaguely and fearfully apprehended. As a consequence, the Indian stands abreast with nature. He does not face it, and hence cannot master or coerce it, or view it scientifically and apart from his own mental and emotional life. He appeals to it, but does not worship it.

and thus belong to the society. Some societies admit women to membership, through their own visions, or occasionally by those of their husbands, but more generally by means of the visions of male relatives. The women sit in a place assigned them, and those possessing clear soprano voices are instructed in the music, and accompany in high tenor voices the men who sing in unison. The songs of a society are rarely sung, except during the ceremonies to which they belong or on some occasion of danger or quest for property. The ritual chants and songs belonging to the great tribal religious ceremonies are strictly guarded and never sounded at any other time. Those belonging to minor societies it is permissible to use occasionally.

All the societies have certain articles or symbols which are always used or at least present during a ceremony or festival, as, the pipe, the sacred dish, the fire, the sweet grass or aromatic shrub, the prepared space of earth, the symbols formed upon it, or marked upon some reflecting surface, or on the skin of an animal. The rites peculiar to each society vary and there are generally articles used characteristic of the animal whose name the mystery bears. Each festival of the same society may differ in minor points, as an assembly only takes place in accordance with a vision, the details of which must be scrupulously fulfilled. A vision, I was frequently told, comes of God, and a man who does not act it all out faithfully commits a sin, and evil fortune will befall him or his parents in consequence of the dereliction.

Membership in these societies is not confined to any particular gens or grouping of gens, but depends upon supernatural indications over which the individual has no control. The animal which appears to a man in a vision during his religious fasting determines to which society he must belong.

The maturity of the sexes is a period of serious and religious experiences which are preparatory by their character for the entrance of the youth or maiden into the religious and secular responsibilities of life, both individual and tribal. Among the tribes which hold especial public ceremonies announcing the maturity of a girl, these rites are held not far from the actual time of puberty, and indicate the close of childhood and entrance of the person into the social status of womanhood. The public festival has, however, been preceded by private religious rites. With young men, the religious training precedes and follows puberty, and the entrance upon manhood is publicly announced

by the youth joining in the dangers and duties of tribal life. According to the old customs, a young man did not take a wife until he had proved his prowess, and thus become enrolled among the manly element, or braves as they are sometimes spoken of. The initial fasts of warriors have been mistaken sometimes for ceremonials of puberty.

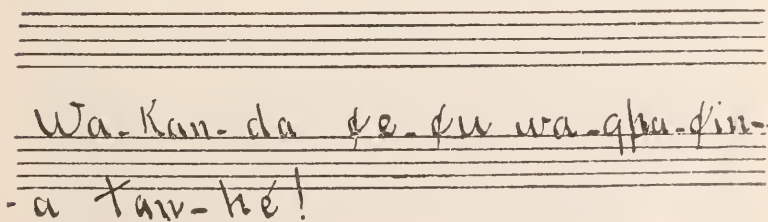
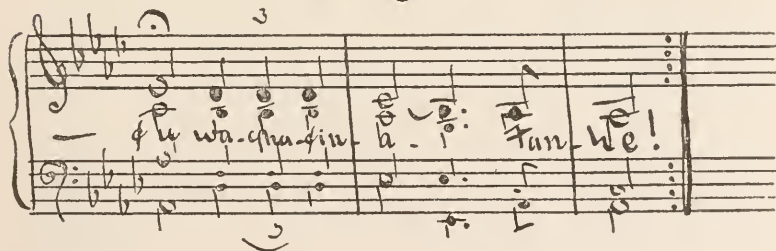
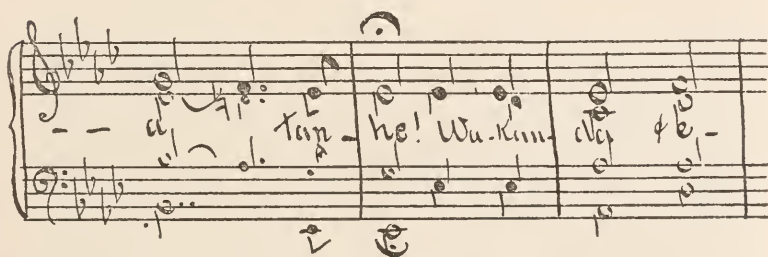
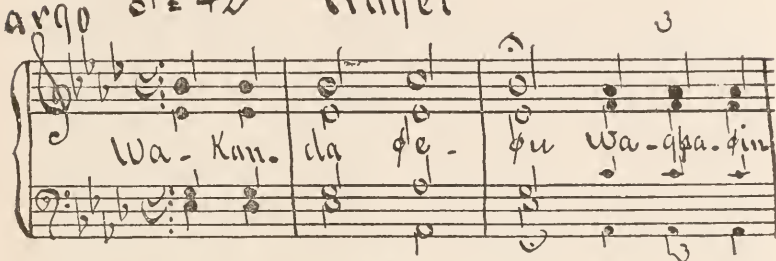
Among pious families the male children are taught by their parents to look forward to the seeking of personal religious experiences in visions, and the boys are encouraged to go forth as early as the eleventh year of their age. The father makes a small bow and arrows and presents them to his son; these are for protection during the lonely vigil and are not to be used to secure food. With prayerful hearts the parents smear the boy's head and face with moistened earth, in token of humility, and the child is dismissed to seek a secluded spot where he is to remain, calling upon the god by using the ritual chant of the petition for such occasions, until the vision appears, or exhaustion drives him home. Visions are sometimes difficult to secure, many tests being needful, and I have learned of a few Indians who never could obtain one. These fastings are repeated after the vision has been seen, as they belong to the religious rites proper to youth. They are believed to be strengthening to the man, by laying up a store of experiences which are drawn upon for succor in the day of battle, or of trouble. At such times, or when on missions of importance, the man recalls his vision and sings its songs thus appealing to his god. After the youth has entered the roll of manhood, he seldom seeks through fasting a return of the vision, except in cases of unusual anxiety or responsibility when supernatural aid is thus invoked. Only men, known as holymen, continue in later life these religious exercises of their youth.

No coercion is brought directly to bear upon a lad to perform these rites, but should he unduly defer their performance he would be apt to lose social caste. Boys frequently go off of their own accord for the first experience, and always voluntarily, except when as children their parents suggest the act.

When a youth has made up his mind to submit himself to the ordeal of facing the supernatural and receiving the sign which will be sacred to him all his life, he takes his bow and arrows and quietly withdraws from his father's lodge, retiring to a lonely place distant from the camp. No one accosts him or notices his departure, no one gives him counsel or direction, entirely alone he goes

out to meet through physical privation the form which will be to him a sort of patron saint, or mediator. He seats himself upon the ground, puts moistened earth upon his head and face, draws his robe about him, and awaits the coming of the vision, chanting continuously the following:² the equivalent of these words

argg $\text{cl} = 42$ Prayer



²The chant given is one used by the Omaha children and men under similar circumstances.

in English being: "O, mysterious one (or God) have compassion, for I am poor indeed."³

It is difficult for one of our own race to enter fully into the mental condition of an Indian youth so placed; one may easily fancy too much, and on the other hand err by accepting too little. The simplicity of Indian life as compared with the complexity of our own is markedly contrasted by these peculiarities. From our birth we are hedged about with questions of law, cause and effect, philosophies, coördinated obligations, all of which force us from too tense a subjectivity, while in Indian life there is little either social or religious adverse to natural instincts, and therefore as this youth sits there, with the tide of life setting in strongly upon him, his thoughts, if one may properly call them such, become blended with the silence and objects about him. All night he must face the chance of hearing ghosts whistle and cry, but these sounds will only tend to make him sink deeper into fancies of natural things, of the animals which furnish food and the chase, of the birds which soar high and escape harm, for these sounds he hears come from uneasy souls who in their earthly life failed to practise carefully the rites of their religious society. If in the midst of his chant he falls asleep, he wakes to another day of watching and fasting. Two, three, four and even five days may pass while the youth waits for the mental picture to come to him with such vividness and strength, as to bring to him the inward conviction that it is indeed a vision. When at last the vision comes, it is the one thing that the Indian holds as his own, incapable of loss. He never in all his life tells it to any one in its minutest details. The most that others may know of it is, when he acts it out on entering the society named for the animal he has seen, or, when on going out to battle or being embarked on some important enterprise, he recalls the vision and sings its song. There is occasionally an Indian who keeps so close counsel that he will not even join the society, and treasures secretly the sign of the animal in the personal bag, a sort of amulet which each one possesses.

³ Concerning the private forms of religious observances, the Indians are very reserved. It was long before I was trusted with the facts mentioned concerning their children and the ritual chant when fasting. It required much persuasion to be allowed to write down the music or obtain permission to tell "the white people." The unvarying reply was; "The white people do not understand us, they laugh at our sacred things, and they will laugh at these things which they did not know before." I plead that the laugh came from ignorance and a better understanding would secure better treatment. On these terms I obtained consent to make public many of the facts set forth in this paper; for, although a close observer, I was not a spy among my trusting friends.

When the ordeal is over, the youth weakened and exhausted returns to his father's lodge, partakes of food and rests. No one asks him of his days of absence, no one even mentions the fact that he has been gone. Four days he speaks little. After that period he may, if he choose, select an old and worthy man, who is known to have seen in a vision the same kind of animal, and after eating and smoking with the man, when they are quite alone the youth may tell that he has had a vision of an elk or hawk or whatever animal he saw in his vision. Should he seek to tell this before the appointed time, four days, had elapsed, his vision would be the same as lost to him. After he has spoken to the old man belonging to the proper society, it becomes the duty of the youth to travel until he shall meet the animal he saw, when he must slay it, and preserve either the whole or a portion. This trophy becomes the visible sign of his vision, and is the most sacred thing he can ever possess. He may wear it upon his scalp lock or on his person during sacred festivals, when going to war, or at other important times.⁴

⁴There are some animals which are esteemed as bringing better fortune than others. Hawks are lucky. Bears are "not so good," as the bear is slow and clumsy, and apt to be wounded; and although savage when cornered is not as likely as some animals to escape harm. There are some things which to dream of is most unlucky. Snakes are said to be terrible; they seek to enter a man's ears or nose or mouth, and should one succeed, it is a sure sign of death. "No good comes from snakes." Among some tribes in this family of Indians, to dream of the moon is regarded as a grave calamity. The man sees the moon having two hands, one holds a bow and arrows, the other, the burden strap of a woman. The moon bids the dreamer take his choice; when the man reaches to take the bow, the hands suddenly cross and try to force the strap upon the man, who struggles to waken before he takes it, and he also tries to succeed in capturing the bow. In either event he escapes the penalty of the dream. Should he fail and become possessed of the strap, he is doomed to be like a woman. He may conceal his dream and endeavor to avoid showing his ill fortune, but few men succeed in this effort after having taken the strap in the dream. Such men speak as women, pursue their avocations and sometimes adopt the dress of the female sex, and they may become subject to gross actions. A man who had the misfortune to be forced to this life tried to resist, his father gave him bow and arrows, but the penalty of his vision so wrought upon his mind that, unable to endure the abnormal life he committed suicide. Among some of the Pueblo Indians, I am informed, there are men dressed as women, and it is stated they practise similar unseemly customs. I do not know if they too are moon dreamers.

Some animal societies are medical in character, as the Buffalo Society among the Omahas; the members attend to wounds and injuries. Their legend says: "Long ago a man had a vision of buffaloes and he saw that one of the animals was wounded. His companions attended him sitting and then rising and walking about him, chewing meanwhile a peculiar root and injecting their saliva into the wound. Four days they did this and after that period declared their companion well." The members of the society possess the secret of this root and treat a wounded man as the buffaloes acted in the vision. At the end of four days the patient is stood on his feet, forced to walk a few steps and declared cured. The rest is left to natural recuperation. They never amputate, but bind fractures in splints.

If the youth determines to join the society named from the animal of his vision, he will have to wait until he shall have accumulated sufficient property to meet the demands of the occasion. It will be needful for him to provide a feast and to give away ponies, blankets or robes and ornamented articles; these latter are contributed by his wife or female relatives.

In 1882 I witnessed the acting out of a vision of an elk by an Ogallala Indian. The man was apparently about 22 or 23 years old and was very much in earnest. The day was bright and balmy, with here and there a patch of light clouds to break the deep blue of the sky. Early in the morning the members of the elk society gathered at the invitation of the neophyte. A new tent had been expressly prepared and was set up to the west of the camp, on an open space quite apart from the village. The door of the tent faced the east. The duty of setting the tent belongs to the women who are members of the society. Around the top part of the tent were painted four blue bands; across the entrance an elk was drawn in red in such a manner that whoever entered the lodge passed through the body of the animal.

The interior of the tent was prepared, as represented in the following diagram, by the elk members, among whom were a few

Among the Santees in past times, a man who should dream of buffalo must announce it in the following manner: he takes the head of a buffalo he has killed, carefully removes the skin, preserving it as nearly whole as possible and throws away the skull and the flesh. He then restores the skin to its natural shape and lets it cure. When this has taken place, a few feet square of earth is set apart at the back of the lodge, the sods cut off and the exposed earth made fine, this is the "U-ma-ne." Upon this earth a new blanket, formerly a robe, is spread. The blanket or robe must not belong to a woman. The buffalo head is placed in the centre of the blanket and one side of the head painted blue, and the other red. Upon the blue side tufts of white swan's down are tied to the hair of the head. Sometimes small eagle feathers are substituted and very rarely the large feathers. Upon the red side, tufts of down colored red are similarly tied. These decorations look like a "woman's sun-bonnet," as they cover the head and fall to the shoulders.

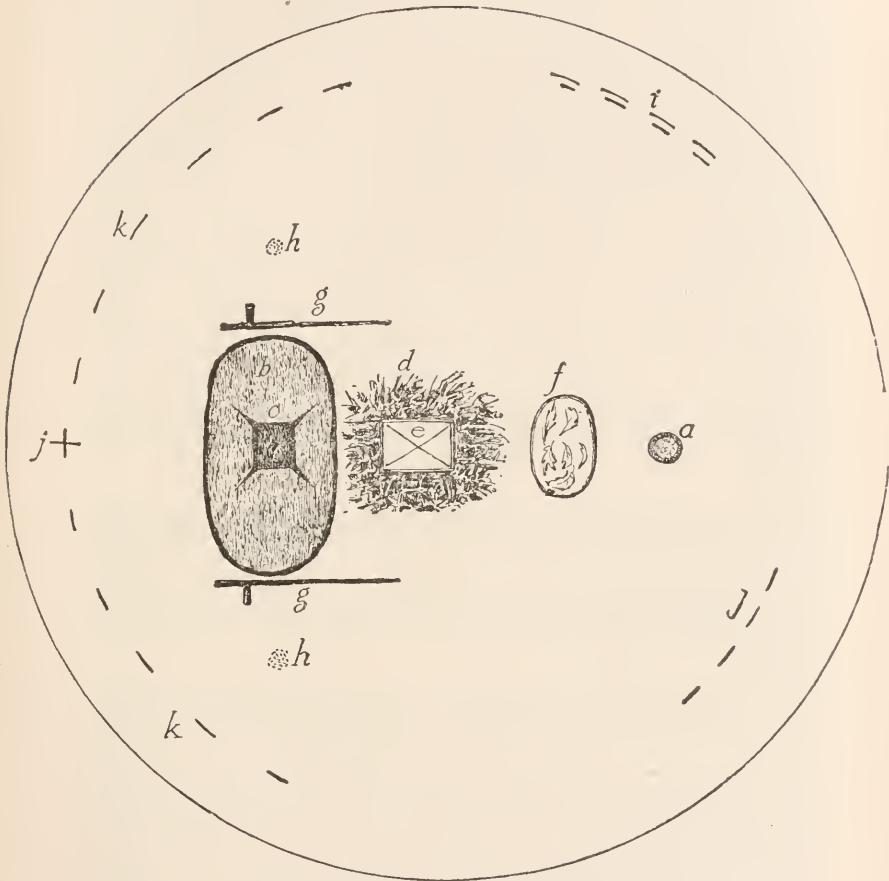
The pipe is only filled and presented to the head. The feast kettle is hung over the fire. When all is in readiness the man who prepared the head thus addresses it.

"Grandfather! Venerable man! Your children have made this feast for you. May the food thus taken cause them to live, and bring them good fortune."

An Indian of remarkable intelligence, whose father before him had been a priest of the higher class, explained that in some religious festivals the buffalo and the earth were spoken of as one and so regarded. "Therefore if any one should revile or ridicule the buffalo ever so softly the earth would hear and tell the buffalo and he would kill the men!" He also confirmed the explanations given me by many Indians in different localities and tribes concerning the reason for mellowing the earth. He said: "We believe the real power of the earth to reside in the freshly exposed soil, so we cut off the sod in preparing it for religious ceremonies, that we may reach this real power and derive benefit from it."

who were leaders and performed especial acts. A pole which had been cut by a relative of the young man (and for the honor of

FIG. 1.



Arrangement within the tent in the Elk Mystery.

doing this act valuable articles had been given away by him) was brought and the youth hung upon it offerings of calico and tied on a few reeds, each one having fastened to it small knot-like bunches of tobacco rolled in cloth.⁵ The pole (fig. 1, *a*) was set up in the

⁵ Poles having offerings of calico tied on them are always raised when formal prayers are made. The fluttering of the cloth is supposed to attract attention and thus the appeal may be heard. Spirits are regarded as very sensitive to any artificial disturbance of the atmosphere causing a breeze. In most of the preparatory ceremonies the person most closely interested is forbidden to shake his garments, or a robe, or move his arms

tent about five feet back, in a line with the door. A few feet behind the centre of the tent an oval (fig. 1, *b*) was cleared of sods and the earth made mellow or fine; in the midst of this, "u-ma-ne,"⁶ as the Dakotas name it, the symbol for the four winds and the earth (fig. 1, *c*) was hollowed out and a coal dropped in the centre of the figure over which sweet grass was laid to smoulder. Over the place in the tent usually occupied by the fire, sprays of *Artemisia ludoviciana* were spread like a mat (fig. 1, *d*) upon which was placed a square looking-glass (fig. 1, *e*) on which lines made of fine dark earth extended from corner to corner, making a cross. Between this and the pole was set the sacred dish⁷ containing water (fig. 1, *f*) and a few leaves having a medicinal property. Two pipes (fig. 1, *g*) were passed through the smoke, then lit and ceremoniously used and laid beside the "u-ma-ne," the stems toward the east, and offerings of food (fig. 2, *h*) put near the bowls. Four young women (fig. 1, *i*) dressed in green⁸ were seated on the right a little within the entrance. They were to assist in singing and carrying the pipes in the long out-door dance.

violently, run, or talk in a loud voice, because of the spirits being thus troubled and affected. Among oriental nations fluttering articles are set up in religious ceremonies from the gayly embroidered pennon, to the unsevered shavings on the rude Aino "praying stick." Among the tents of the Dakotas one may see poles with bits of cloth hanging from their tops, leaning up against the log cabins, thrust between the smoke flaps of the tent, or stuck in the ground beside the lodge, showing that some one is sick or in trouble and is thus seeking help and a blessing. In great distress several poles may be raised.

⁶The mellowed earth space, "U-ma-ne," in Dakota, and called by some peculiar name in other tribes, has never been absent from any religious exercise I have yet seen or learned of from the Indians. It represents the unappropriated life or power of the earth, hence man may obtain it. The square or oblong, with the four lines standing out, is invariably interpreted to mean the earth or land with four winds standing toward it. The cross, whether diagonal or upright, always symbolizes the four winds or four quarters. An Indian explained the looking-glass by its reflecting property to stand for the light; and the sign of the four quarters crossed on it, with the lines of earth was to show that the light was everywhere over the land.

⁷A wooden dish, often of peculiar form, is kept for religious ceremonies. There are traditions of red vessels, "long, long ago before our grandfathers' time." I could learn of no pottery dishes thus used, although some of the tribes, as the Omahas, made pottery a generation or two ago. One of the sacred wooden dishes belonging to the Omahas is in the collection of the museum. An Indian said of the water in the dish, "We must have water for our health so we put the water there as a prayer and the leaves were medicine to cure disease."

⁸Green occurs in several ceremonials and in nearly every instance seems to possess a significance connected with fruitfulness. Among the Omahas the ear of corn used to rub upon the arm in asking the blessing of plenty is painted green. The bladder sent when large gifts are expected to be bestowed on the visitor is painted in the same color. The women in green represented female elk. I am informed that among some of the Pueblos it is a sacred color of feminine characteristics.

The acts of preparation, including the painting⁹ and masking of the male members, were accompanied by the ritual songs.

In visions there are four colors which appear. One of these the youth must see, and afterward paint himself with the color when performing the rites connected with his vision. The four colors are spoken of as, "the white cloud," "the red cloud," "the blue cloud," "the yellow cloud."¹⁰ On the occasion when I was present, the young man who was acting out his vision had seen the "yellow cloud" and his body was therefore painted yellow. He (fig. 1, *j*), and all the other men members of the Elk Society (fig. 1, *k*) seated on either side of him were naked, except a close breech cloth, and decorated according to the colors seen in their respective visions. They wore masks resembling the heads of elk. These masks were made by bending willow branches so as to form a framework, with a straight bar across the top of the head, two side pieces passing down by the ears and fastened to withes which circled both forehead and neck. Antlers, resembling those of the elk, were ingeniously shaped from boughs and covered with rolled bands of cloth; these were fastened to the side pieces. Over the frame a thin cloth was stretched, having holes to let the antlers through and enclosing the head of the man like a bag. The cloth masks were variously painted and decorated. One had a small circular looking glass like a single eye fastened on the forehead, others had two glasses in place of eyes; nearly all had something fastened on them which would catch and reflect the light.

When the members were masked and painted they presented a strangely grotesque appearance, but there was nothing ludicrous. Upon the back of one man a circle was drawn in blue paint, in

⁹ The putting on of paint is always a part of Indian ceremonial, religious or social. It forms a part of the formal approach in religious ritual so essential to the Indian mode of thought. The dead are painted that the person may meet the spirits in proper guise. It is also regarded as an offering of prayer.

¹⁰ White, blue, red and yellow, possess different meanings yet are not very clearly determined by all tribes. Among the Dakotas the following interpretation prevails. White is *seklom* used artificially, when it occurs in nature, as the white buffalo, deer, rabbit, etc., and on the plumage of birds it indicates consecration. The sacred feathers and down are always white, the former being taken from the under part of the eagle's wing and are soft and downy. This meaning of white holds good with the Omahas, Poncas, etc., and seems to have a wide application among the Indians. Blue represents the winds, the west, the moon, the water, the thunder and sometimes the lightning. (I have learned from Mr. Frank Cushing, that blue is also the typical color for the west among the Zuñi Indians.) Red indicates the sun, the stone, the forms of animal and vegetable life, the procreative force. Yellow represents sunlight as distinguished from the fructifying power of the sun.

the centre of which a splinter of wood was passed through a stitch of guticle: from the wood dangled an eagle feather fastened by winding a loop of sinew like the figure 8 about the splinter. This I was told represented a special prayer that any wounds the man might receive should not bring death.¹¹

Friends and spectators were seated just within the entrance, on the left (fig. 1, l).

The morning was consumed with these ceremonies. About 2 P. M. the pipes were handed to two of the young women, and they and the other two passed out of the tent and began walking slowly up the valley toward the north, the two with the pipes preceding and holding the stem forward and upward.

The women had not gone far when the men one by one emerged from the tent, each one taking attitudes indicating caution, as the elk might step forth from cover and look about him. In this manner imitating the elk, the men followed at a distance the girls who were carrying the pipes. Sometimes the elks would leap, crouch, trample the dirt, or glide noiselessly along. Two or three of the men carried a hoop in their hands, one hoop containing a square from which depended a fringe of rattling deer hoofs. The neophyte held one having a circular mirror, fastened by four cords, from which he cast a reflection of the sun from time to time upon the ground, or held up the hoop and flashed the mirror.

This singular company made their way slowly, often doubling on their tracks until they had gone three or four miles up the valley, following in a general way a prettily wooded creek. The girls were always in the advance, their black hair and long braids shining in the sun. I did not once see them turn to look at the dancers who were following with wild, yet not unseemly antics.¹²

¹¹ The splint represented the wound, the eagle feather showed it to be honorable, the line of blue circling it was the four winds, which blow away disease and baneful influences, so that a wound thus encompassed could work no harm. The following, from a Japanese Shinto prayer addressed to the god and goddess of the winds, is almost identical with similar Indian petitions: "Bless me by . . . blowing off and clearing away the calamities which evil gods might inflict by causing me to live long like the hard and lasting rock."

¹² In all Indian ceremonials there are portions where a sort of ritual of steps is observed. These differ somewhat from the regular dances with figures, postures, and placing of the feet, all of which are more or less arbitrary. There is a fixed form for everything the Indian does and in the elk mystery are certain procedures which, although difficult for the white spectator to define and discriminate clearly, are to the Indian precise and essential. The whole movement of this long dance with its queer posturings and actions was not without untrammelled grace and spirited action that produced a lasting impression.

As the dancers passed on, the men, women and children from the village flocked after the "elks," but never approached within fifty feet of them. The silence and intentness of the actors and spectators added a seemingly incongruous element which arrested the attention of the looker-on, and brought the conviction that the spectacle was not in sport but of a serious character. The ground passed over in going and returning, taken in a direct line, could not have been far from six or seven miles, though this represents but a small part of the distance travelled. Over four hours were passed in this tortuous dance, if it can be so called. As the company neared the tent from which they had started a venerable Indian drew my attention to the east, and there I saw pencilled against the sky a portion of a rainbow. Every one was soon looking at the favoring sign and all faces were bright at the promised blessing. While I expressed my sympathy with the people, I could not help glancing about to find the signs of rain, for there had been none all day, and now the buttes were golden in the setting sun, and the fleecy clouds which floated here and there were pearly and light. Without stopping to think, it was easy to share the popular feeling that it was a miraculous indication as an Indian friend said to me: "That rainbow has come directly from the god to show that our friend has faithfully acted his vision, and that his vision was true and his prayers accepted. Our friend has done right! The god has seen it and has told us so!"¹³

When the girls reached the tent the pipes were returned to their places beside the "u-ma-ne." The elk members entered one at a time and resumed their former places. Last of all the youth passed in, acting to the end as an elk retiring to a place of quiet safety. The man took his seat in the middle of the group of his associates. After a silence all the men unmasked and gathered their

¹³ Hundreds of the Indians were out watching the dancers. The young men standing in groups, their white canvas blankets drawn over their heads and faces, leaving but one eye exposed. Older men stood bareheaded, looking on with gravity. Occasionally one of the bystanders would dart ahead so as to come abreast with the dancers but still keeping forty or fifty feet off to one side; then he would suddenly squat on the ground where the soil was exposed and make symbols in the loose earth, sometimes using saliva to insure consistency. No one observed or molested the man in any way. I saw two or three such episodes while the dancers were out. I could learn little of their meaning except that the man was working his mystery. When the procession, on returning, neared the village, the old men and women came out from their lodges to look at it and would lift up their wrinkled arms making the sign of thanks as the dancers passed. The religious devotion of the elk members evidently affected a wide circle and the appearance of the rainbow seemed to rouse the entire people and awaken a religious fervor.

blankets about their dripping bodies. Friends looked in, and in the course of half an hour the company moved off to enjoy the well-earned feast. The tent was soon lowered,¹⁴ and night closing over the scene left it in the past.

¹⁴ Articles which have been consecrated, as the pole and its offerings, the Artemisia, the earth, etc., are not removed but are left for the elements to disperse. No one "clears up" after an Indian festival, but the ubiquitous small boy generally avails himself of any handy article and no one seems to mind his action or look upon it as sacrilegious: evidently he is not yet within the pale of observances.

THE RELIGIOUS CEREMONY OF THE FOUR WINDS OR QUARTERS, AS OBSERVED BY THE SANTEE SIOUX.

BY ALICE C. FLETCHER.

AMONG the Santee (Sioux) Indians the Four Winds¹ are symbolized by the raven and a small black stone, less than a hen's egg in size. During the religious fasts which every young man must hold with more or less frequency, he may see in his vision one of these symbols, and it will then become his duty to seek the natural counterpart. If he sees the black stone, which is difficult to find, considerable time may elapse between the vision and the securing of the desired object, by which his vision is to be verified.² The quest for the raven or the stone is religious in its

¹ An intelligent Santee Indian said to me: "The worship of the Four Winds is the most difficult to explain for it is the most complicated. The Four Winds are sent by 'the Something that moves.' There is a 'Something that moves' at each of the 'Four Directions or Quarters.' The Winds are, therefore, the messengers or exponents of the powers which remain at the Four Quarters. These Four Quarters are spoken of as upholding the earth, and are connected with thunder and lightning as well as the wind. Life, both in its continuity and its vicissitudes, is connected with this religious form of an idea which perhaps belongs to the primary and esoteric class. In every religious festival I have seen, or been told of by the Indians, the Four Winds or Quarters are recognized by signs drawn on skins, on the earth or on some of the sacred articles.

My informant went on to tell me that "the spirits of the Four Winds were not one, but twelve, and they are spoken of as twelve. In an Ojibway myth given by Schoolcraft and called "Lone Lightning" there are twelve arrows used. In a Shawnee myth twelve sisters descend from the sky upon the circle of cleaned ground and become instrumental in the creation of animals and birds. Other myths connect the number twelve with the Four Winds or Quarters, and their cognates thunder and lightning, and the powers belonging to them. The universality of the worship of the Four Quarters is well known. Some forms of the worship, as that of the Hebrews, remind one of the Indian mode of expression when shaking the bunches of herbs to each of the Four Quarters as the procession moved during the feast of tabernacles.

When a people have arrived at the art of carving in stone and building edifices, figures expressive of the Four Quarters are often to be found. As among the Japanese, where these symbols of an earlier worship are placed in the position of supporting and sustaining the symbols of the more modern Buddhism, these figures are described as having claws upon their feet, their garments as if blown by the winds, their heads surrounded with flames, and two projecting front teeth. By the last mentioned peculiarity, one is reminded of the representation of the human face so frequently met with in Central and South America.

² It is not enough to have had the vision: the man must seek for the natural object which was represented before the true benefits of the vision can be received. This rule holds good among all the religious societies and various tribes I have personally met and studied.

character, entered upon with supplication, and the favor of the gods is manifested by a successful issue. When the black stone has been secured, the following rites are observed.

The finder of the stone must first procure a quantity of down from wild geese, hunting and killing the birds himself. The down thus procured is colored with red ochre,³ and put into a buckskin bag made for this purpose, having thongs to tie it up tight; into this receptacle the stone is dropped and kept carefully laid away in the pack containing the gala dress, pipe, bag and other articles used by the man on occasions of ceremony. Two deer or elk skins are dried in a frame, the hair being removed. These skins are to serve as drums.⁴ Two other deer skins are carefully dressed for robes. The edges of the robes are trimmed with tufts of down, a line of large eagle feathers is fastened from shoulder to shoulder, and an eagle feather hung from each leg flap. In the centre of each robe, a disk about six inches in diameter is painted with blue earth, and while the paint is still moist, down, colored with red ochre, is made to adhere. Just below the row of eagle feathers, four zigzag lines are painted in blue.⁵ These ornamented skins are prepared previously to the festival, except the painting, which is done at the festival and forms a part of the ceremony.

A new tent is set up at a little distance from the man's lodge, the door facing the east. Invitations are then sent to all the men who have seen the raven or the stone in their visions to come and partake of a feast and join in a festival, when the finder of the Stone shall proclaim his religious emblem and association.⁶

³ Down colored with red ochre occurs in many religious ceremonies and among many tribes. It is significant that in the Dakota, Omaha, as well as other tongues, the stones used in sacred ceremonies, the down, red ochre, etc., are classed as animate substances, being thus raised by their importance in religious rites out of the inanimate gender to the animate, thereby indicating an interesting step towards anthropomorphism.

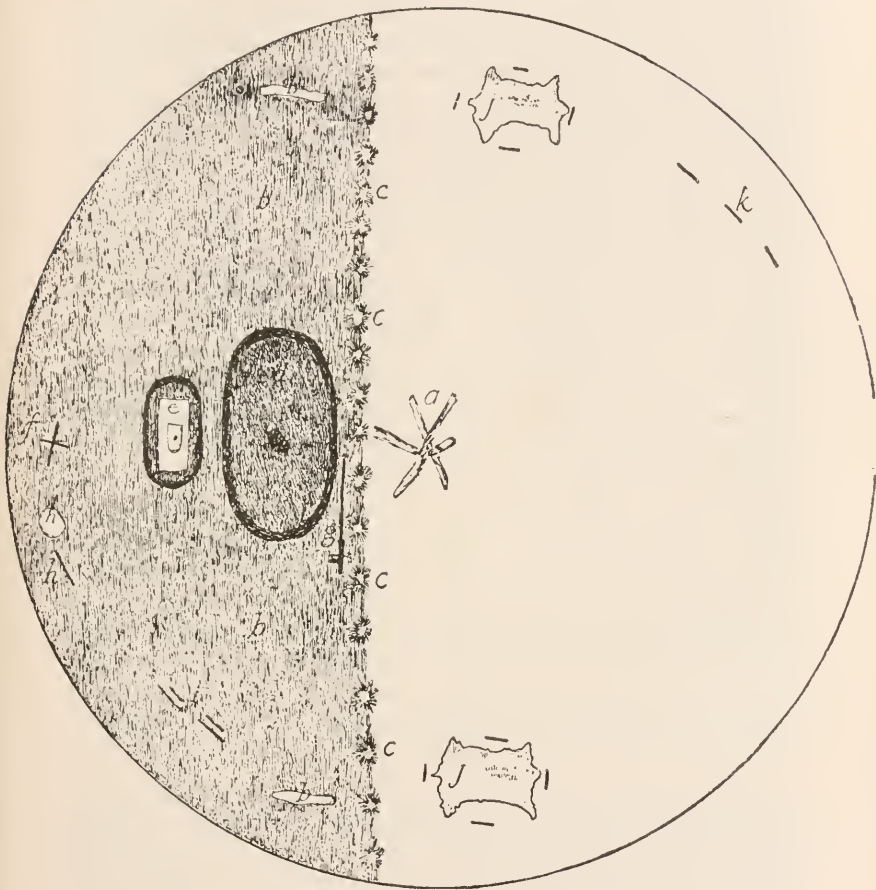
⁴ The drum used by the Ogallalas at the sun dance was a similarly dried skin.

⁵ Blue is used to typify the west, thunder, lightning, winds, and is one of the four principal colors. Blue is the color mainly used in tattooing, as the blue mark put upon the forehead of girls in accordance with certain duties fulfilled by the father. Among the Omahas those men, who by their visions belong to the Thunder societies, paint themselves with blue spots on the face, and some have the circle with four radiating lines indicating the four winds or quarters pictured upon their breast. Myths associate this color with the four quarters, winds, thunder, lightning, and rain or water.

⁶ These religious symbols are the most sacred personal possessions; they are rarely inherited, being generally buried with the person. In a few cases, when a man has possessed peculiar powers of prophecy and supernatural force, his son, if he inherits

A fire (fig. 1, *a*) is built in the centre of the tent; a little back of it a line is drawn across the earth floor and all the sod removed between this line and the back of the tent as represented

FIG. 1.



Arrangement within the tent during the ceremony of the Four Winds.

by the shaded portion of the diagram (fig. 1, *b*). Tufts of down (fig. 1, *c*) are thrust in the ground along the edge where the sod is cut off, thus setting apart the consecrated space. A foot

his father's talent, would sometimes inherit the sacred symbol of his progenitor and carry it with his own, in his personal bag. In every instance which I have been able to authenticate, these more recondite gifts have been accompanied by a sort of medical skill.

or so back of this demarcation of down, in a line with the fire and the door of the tent, an oblong is drawn (fig. 1, *d*) and within it the ground is carefully mellowed.⁷ In the centre of this oblong some coals are laid and on them sweet grass or cedar⁸ dropped to give forth an aromatic smoke. Behind this oblong, a foot or more, an oval is drawn, and within it the ground similarly mellowed. On the ground, thus prepared, a new blanket is spread and upon it the bag containing the stone is laid (fig. 1, *e*). Behind this sits the finder of the stone (fig. 1, *f*). The pipe, set apart for this festival by the finder of the stone, is filled with proper ceremony, and after being passed through the smoke of the sweet grass is laid beside the mellowed earth (fig. 1, *g*). A small drum is placed at the back of the tent on the right of the centre, and a "wakan" man sits beside it (fig. 1, *h*, *h*). Two girls (fig. 1, *i*) who are to sing during the ceremony, sit to the right of the drum.⁹ The two dried skins (fig. 1, *j*) are placed just outside the line of down, one on the south and the other on the north side of the tent, and by each skin, four young men sit down in places corresponding to the four quarters. On the north side of the tent, between the hide and the door sit three young men (fig. 1, *k*) having rattles or bells. After these are placed, the two ornamented robes are brought in and the blue disks and the four zigzag lines painted on them. These robes are then hung upon poles (fig. 1, *l*, by mistake marked *b*, *b* in the diagram on the two white oblong spaces) inside the line of down, one on the north, the other on the south side. The bag is then untied and the stone enveloped in down held over the sweet scented smoke, after which consecration this stone is laid upon the outside of its bag on the blanket. The pipe is now extended toward the stone and then replaced beside the mellowed earth.

⁷ In this ceremony the ground seems doubly prepared. Not only is the sod removed from nearly one-half the tent where all the sacred articles are to be laid; but beneath this incense fire and the blanket or skin, on which the bag and black stone are laid, the ground is more carefully mellowed and set apart. The universality of this mellowing of the earth, its appearance in the myths and its connection with every religious ceremony render it an important object of study as to its origin and real meaning.

⁸ Cedar is regarded as sacred and assigned a sacred office, not only in the religious ceremonies but in the myths. Nor does the sacredness of the cedar seem to be confined to the northern Indians. Among the Muskogées it was one of the plants given by the men who came from the four quarters to instruct the people in their early days. In this myth the cedar is not only counted as one of the sacred gifts but connected with the four quarters.

⁹ The place of the woman in the tent and in ceremonies is to the right of the man. The position is significant in many ways, and indicates among other things the absence of the unifying idea which lies at the base of monogamic marriage.

After this ceremony, the ritual chant is sung by the finder of the stone, who accompanies himself with a deer-hoof rattle. The "wakan" man also chants, sounding the drum, as do the eight young men who beat the dried skins, and the two girls, thus making twelve singers, while the three young men by the door accent the time with their rattles or bells. At the close of the chant the finder of the stone puts a whistle made of cane to his lips making a shrill call. After a silence, the chant is repeated by the singers, and again at its close the whistle is blown. Before chanting the ritual a third time, the singers all give the victory shout and then proceed with the chant; at the close the whistle is sounded. During the fourth chanting of the ritual, the finder of the stone is supposed to hear from the west a voice. This voice proceeds from "the Something that moves" the west wind or the western quarter. The finder of the stone makes answer saying, "Father?" At the close of the chant he announces that "the Something that moves is coming." Ashes are strewn over the fire, for "the Something that moves" cannot approach over an open fire. The finder of the stone is now supposed to hear the following inquiry, put to him by the approaching deity: "Why have you called me?" The man makes answer: "I have called asking for protection from sickness, from enemies, for success in hunting;" "then he speaks of any trouble that lies on his heart." In answer to these supplications, the man believes that he hears that he is to be held in safety for a certain length of time, one, two or more winters, according as he hears the god say. During this period of safety he may sing gently to "the Something that moves" and make feasts and give away articles in honor of this god, but must not call upon him until the term specified has expired, and then he may hold another festival and call on the god and obtain a new term of protection. During the interim the man must fully believe that this god is present with and caring for his faithful follower,¹⁰ who on his part must treasure the sacred symbol of the

¹⁰ The implicit faith in the careful performance of rituals should never be lost sight of, as a distinctive characteristic of Indian religious ceremonials and as exercising a marked influence on the thought and action of the people. A woman whom I knew, and who was suffering from a nervous affection which made it almost impossible to walk, was hopeless of treatment, and her husband, also, because she had failed once in some of the minutiae of the observances at a religious festival, and she was thus consequently punished. Every ill of life is supposed to be traceable to some such sin of omission, the people reasoning from the analogy of the relation of one person to another, or one tribe to another, where breaches of etiquette might lead to disastrous results.

god always carrying it in time of trouble and danger, and on occasions of religious festivities.¹¹ After the supposed colloquy between the god and the man is ended, and the stone is put into its bag and this tied up, the pipe is lit, passed and smoked, and all those present being of one religious society¹² partake of a feast, at which time many gifts are distributed by the finder of the stone.

Should this man have a child it may receive a name, sacred in character, at a similar festival, where every preparation and ceremony as herein described is repeated. The child is brought in just before the chants are sung. The "wakan" man calls to "the Something that moves," and as he calls he mentions a name, as for instance, saying "Ta-teo comes" (Ta-teo or Big Nation was given to a child on such an occasion). This name, which is supposed to be recognized and acknowledged by the god, since he comes to its call, is to be the name of the child, and he is thus placed under the protection of the god who has answered it. When the "wakan" man says "Ta-teo comes," "the Something that moves" enters the tent and is supposed to speak as for the child, saying to the "wakan" man: "Father, what do you wish?" To which the man replies: "Child,¹³ we ask you to have care of this boy, to keep him from sickness and ill-fortune. We have given this feast for you, behold, the skins and the offerings we have made in your honor." After these words have been spoken, the goods are given away to the poor and all the articles disposed of, and the child is received under the protection of his father's

¹¹ To disbelieve in the potency of the symbol would be like treachery to a friend, and by this means evil would befall the man who doubted his vision.

¹² All men are open to the visitation of visions, if they properly seek them, though exceptions are known where no amount of fasting would bring about the desired effect. These religious societies, therefore, draw their membership from all the gentes and are small private circles within the great religious circle of the tribe. When the annual religious festivals are held, all persons must take part, and as far as I have been able to learn none of these religious societies at that time take any precedence, or as societies perform especial religious services. The old religious forms and rituals are often preserved in these societies after the tribal religious ceremonies, from untoward circumstances, have fallen into disuse.

¹³ It is well known that Indian social etiquette forbids the mention of a person's name in the person's presence. In a few of the most sacred rites or on occasions of grave solemnity this rule has an exception, and the man or men may be called by name. At other times, as during the tribal festivals, when the criers summon a man his son's name is called and the father, hearing the sound, responds.

god and bears henceforth the name pronounced.¹⁴ A feast closes the festivities.

¹⁴ It frequently happens that an Indian man has several names. First, he has the name given him by his father or near relatives, his home name, or else the name given in some such ceremony as described in the text. Second, he has the name assumed by him when he first goes forth to prove his prowess and manly qualities, so that he may be accounted as worthy to be enrolled among those who shall protect the tribe from danger and provide for the wants of the family. Third, he may have a name or names which have been given him by others to commemorate a brave deed or a foolish act, a personal peculiarity or some queer adventure.

The name given by parents or relatives generally belongs to the gens in which the child is born, and the name given religiously may refer also to the gens or may be significant of the religious society of the father. A name implies relationship, and consequently protection; favor and influence are claimed from the source of the name, whether this be the gens or the vision. A name, therefore, shows the affiliation of the individual; it grades him, so to speak, and he is apt to lean upon its implied power; consequently a man does not like a bad nickname, it handicaps him in his own esteem. The sacred import of a name in the mind of the Indian is indicated in that part of the ceremony where "the Something that moves" seems to overshadow and enfold the child and addresses the "wakan" man as "father." The "wakan" man replies calling the god "child," at the same time invoking the supernatural protection and care for the boy, as he lays at the feet of the messenger of the Unseen Power, the offerings of gifts and the honor of the feast. The personal name among Indians, therefore, indicates the protecting presence of a deity and must, therefore, partake of the ceremonial character of the Indian's religion.

THE SHADOW OR GHOST LODGE:
A CEREMONY OF THE OGALLALA SIOUX.

BY ALICE C. FLETCHER.

THE ceremonies here described were witnessed among the Ogallala Indians in 1882. The old men of the tribe told me that formerly a period of two years was necessary to fulfil the requirements of this rite. Now six months or a year will suffice.

These Indians entertain the belief that after death the soul will linger near the body so long as it is preserved or any part of it kept intact, particularly if not exposed to the air. The clothing too, which was needful to the comfort of the body, partakes of the individuality of the person and the spirit will linger about these articles. On account of this belief the personal belongings are always placed with the body of the dead, and an Indian will never consciously wear any article of clothing which has been used by one who is deceased. This idea that the soul lingers near any part of the body which is carefully preserved is closely connected with the Shadow or Ghost Lodge. The name was explained as referring to the soul being like a shadow continually with the body and at death gradually fading away.

A ghost lodge is usually kept for a child. The rites are initiated by the father who is the principal actor and responsible person in all the ceremonies. It is creditable to have kept a lodge of this character, and the public consideration seems to arise from the general respect paid to any especial honoring of the dead, as giving proof of family faithfulness and affection, as well as the accumulation of wealth by the father, and the characteristic disposition of it. It is by such deeds that a man gains tribal distinction, and favors his advance to public office. These preferments are won from the tribe by an Indian proving his devotion to the religious ceremonies and traditions of his fathers, by a faithful fulfilment of certain rites, as well as by showing prowess in action and wisdom in counsel.

If, on the death of a child, the father desires to keep a ghost lodge, he speedily sends for a holy or "wakan-man," who on his

arrival at the father's tent, takes a pipe, which is handed him, and fills it chanting a ritual suitable to the occasion. One of the criers of the camp is called and he receives the pipe and starts for the tent of a man who has successfully kept a ghost lodge. As the crier enters the tent he says in an intoning voice :¹

"The one who sends me wishes to keep a ghost lodge," and offers the pipe. The man addressed accepts the pipe, lights it, and smokes it in silence. When it is finished he goes to the father's tent where the child lies dead.

After entering the tent and observing a brief silence the man sent for walks over to where the child lies dressed in its best clothing, its face painted red, and taking a knife cuts off a lock of hair just above the forehead. He then hands the hair to the mother, who takes it, wraps it in a piece of new cloth, and lays it away, where it remains undisturbed for four days. Skin was formerly used in place of cloth.

Four yards of red cloth are divided into two parts. One part is carried out beyond the camp, to an elevation if possible, and buried in a hole about three feet deep. This is an offering to the earth, and the chanted prayer asks that the life, or power in the earth, will help the father in keeping successfully all the requirements of the ghost lodge. The other part of the red cloth is lifted and offered to the buffalo, with a prayer that good may be granted to the father during the period of the lodge-keeping. After this ceremony the cloth is cut into eight strips and given to eight men who have successfully kept a ghost lodge. This is a request for their good will and help. Formerly a deerskin, well tanned and painted red, was thus offered. These ceremonies are performed by the wakan-man and the man who cut the child's hair.

The dancing society to which the father belongs present him with horses, and friends make gifts ; these are all treasured against the day of final ceremonies. After these preliminaries the body of the child is put away with the usual burial rites.

The duties of the father begin at the time the hair is cut and continue until the closing ceremonies, six months or a year afterwards. During this interval he cannot eat dog meat or any flesh

¹The prayers and rituals are chanted or intoned. When the latter is used the breath is audibly inhaled, something as it is during ceremonial smoking. All ceremonial addresses and announcements by the criers are given in a key differing from the natural tone of voice. This is the conventional manner, and is often unconsciously adopted on ordinary occasions.

scraped from the skin or hide of an animal. He cannot cut open the head of any animal to get the brains, strike or break any ribs or do any butchering. He cannot take a gun, pistol, arrows, or any weapon in his hand. He cannot run, go in swimming, make any violent movement, shake a blanket, his clothing, or in any way disturb the air. No one must pass before him or touch him, and to prevent this disaster a coal of fire is always kept about two feet in front of him as he sits in the tent. Although he remains with his family he must live apart from his wife, and on no account take a child in his arms, for if he should so forget himself the child would surely die.²

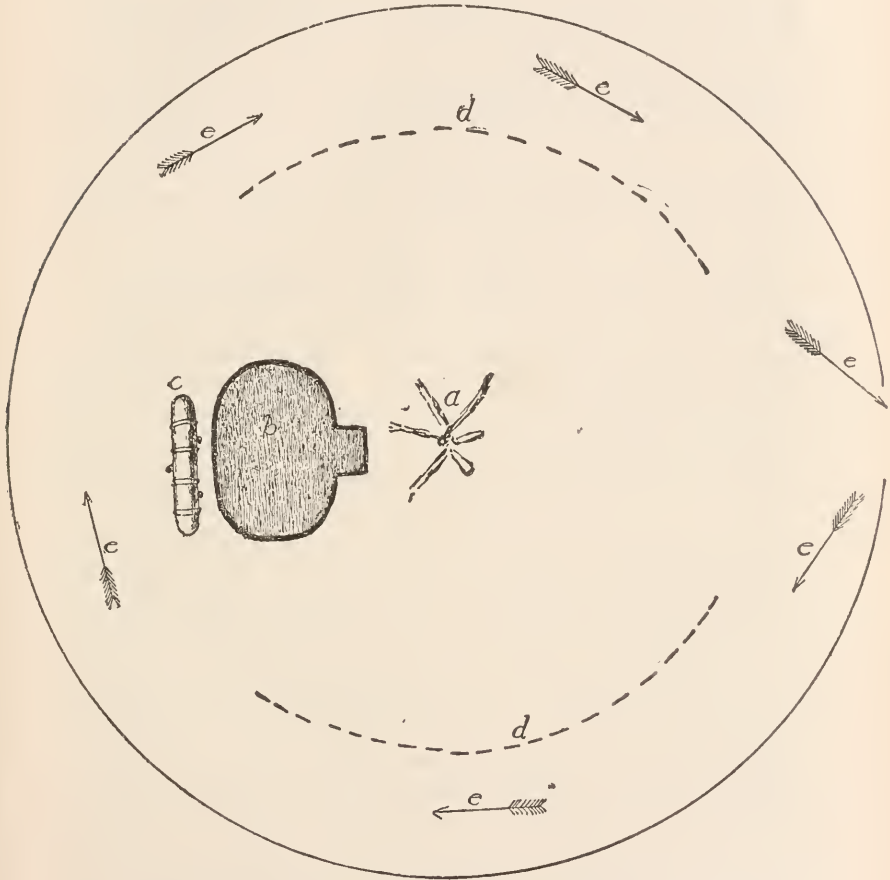
During the four days the hair is laid away the mother and sisters, or the near female relatives, make a small buckskin bag in which the hair is to be placed. A pack of the same material or cloth is prepared, having buckskin thongs with which to tie it. A new tent is pitched not far from the father's tent, the opening toward the east. Formerly this tent for the ghost lodge was set a little within the tribal circle or open space, out from the line of living tents.

On the fourth day the wakan-man, and the man who had cut the hair from the child, repair to the tent set apart for the lodge, and make up the pack into a roll about six inches in diameter and two feet long, enclosing the buckskin bag containing the lock of hair cut from the child, and the pipe which had been filled by the wakan-man and sent out by the father. To these are added any other articles which the parents may choose to contribute. Three crotched sticks had been cut by a male relative, and for the honor of doing this he had given away the value of a horse. On these sticks the pack is tied. A fire (fig. 1, *a*) is made in the centre of the tent, back of which an oval is drawn upon the ground about three feet

² An Indian who was keeping a ghost lodge attended the sun dance. One day while there he forgot the duties of the ghost lodge and suffered his six year old daughter to approach him, and took her in his arms. Too late he recalled the penalty he had incurred. A fortnight later when I entered his tent, where he was sitting with the coal of fire before him, I saw the little girl lying sick unto death, on the opposite side of the fire. Bending over the child it was evident that she was beyond any medical aid. Her father accepted her fate as a punishment he had merited. Her mother was equally hopeless and sat without, working on moccasins to be given away on the approaching final ceremonies, while her brothers and sisters were racing over the hills pictures of careless health. It was a striking scene. To every inquiry I made as to the cause of the child's illness, cold, fever, or the like, the invariable answer given by relative or acquaintance was: "Her father forgot and took her in his arms." It was impossible to present to the people any natural cause for the child's illness, from that which was so clearly another evidence, supernaturally given, of the sanctity and power of their religious ceremonies. Next day the child died, leaving her parents full sore at heart.

in diameter, having an elongated opening at the east (fig. 1, *b*). The sod is then removed from within the figure and the earth thus exposed is mellowed and made fine. Down from the wild goose,

FIG. 1.



Arrangement of the ghost lodge at the beginning of the ceremony.

colored with red ochre, is placed along the outline of the figure.³

³ Here again is met the U-ma-ne, which occurs in every festival so far met with, as also the down of the wild goose, and ochre. The constant recurrence of certain symbols and articles used in religious ceremonies indicates lines for the careful investigation of students.

Behind the oval figure the three crotched sticks are set up having the pack fastened to them where they come together (fig. 1, *c*). A bowl and a wooden spoon are fastened to the outside of the pack.

No woman but the mother of the child is allowed to enter this tent. She has charge of the pack, but can only pass into the tent when performing some duty incident to the lodge-keeping. When entering the tent she turns to the left and makes the entire circle, always going behind the pack and passing out by the right. This mode of entering and leaving is observed by all who enter the tent, and is indicated by the arrows in the diagram (fig. 1, *e*.) No one may pass between the pack and the symbol drawn on the ground, or between that and the fire.⁴ Nor can any one turn back on his passage round the tent, for one must always move in a continuous circle from left to right. On clear sunny days, when the wind does not blow, the mother carries the crotched sticks, with the pack tied to them, outside the tent, setting them up about four or five feet in front of the entrance. As the sun declines she returns the pack to its place in the tent. When it thunders, or if a gun should be fired, or any unwonted noise should be heard, she must hasten to cover the pack. If, when the pack is out of doors, a sudden wind should rise, the mother must instantly take the pack into the tent. Thus her constant care is necessary.

Every day the father of the child enters the ghost lodge tent and the mother, soon after, sets kettles of food inside the tent door. The father loosens the dish from the pack, a small quantity of the food is placed in it, and the dish set down near the pack. The father then takes a bit of the food from the dish with his fingers and, lifting it, says: "We offer this food that you may help us, that we may escape ill fortune. We ask you to help us to avoid any sickness or misfortune that may lie in our path."⁵ The offering is then dropped upon the mellowed earth and buried in it. During this ceremony persons of the male sex may be present; their position on the north and south side of the lodge is indicated on the diagram by the letter *d*. It is usual for orphans, the aged, or any one in need of food, to repair to the ghost lodge to

⁴ The spaces here mentioned are always considered as consecrated or set apart in every ceremony I have witnessed or learned about, and this applies to many tribes.

⁵ This is the usual form of asking a blessing. This ceremony takes place at every feast, dance or ritual observance where food is eaten. The father does not address the ghost pack, but the deity or life of the animal food.

share in this daily feast given by the father as a religious hospitality.

In the tent certain rules must be observed ; the mode of entering, moving about and leaving have been already mentioned. No one may blow the fire with his mouth. When it needs to be livened one may gently fan it with the wing of a bird, but in no other way : no one may spit toward the centre of the tent, but if he needs to cast anything from his mouth, he must turn his head and throw the saliva behind him. No tales of fighting, nor any quarrelsome words, nor any subject which is "bad" must be spoken in a ghost lodge. Quietness and friendliness must pervade the tent.

If at any time during the period of keeping the lodge the father should by accident hear of any violent words or deeds, he must at once perform certain rites which will avert the evil consequences to him and his family. He must take a few coals of fire, and lay on them a bunch of sweet grass, or sprays of cedar. As the smoke rises he must crouch over the coals bringing his blanket close about his body, drawing it over his head and face so as completely to shut him in with the smoke ; sitting thus while the aromatic fumes circle his entire person, he thinks of the duty of carefully fulfilling the ritual of the religious ceremony and by his faithfulness arresting disaster and securing good fortune for his kin.

During the months occupied with these duties the man can do little more than fulfil them. As he is debarred from hunting and providing food and raiment, his needs are supplied by his kindred. It is not enough that his avocations should be peaceful but it is his duty to relinquish any hard feeling he has had and forget old injuries. The keeping of a ghost lodge is a signal of peace and cancels all grudges between parties. The father may not smoke with any one lest he should consort with a man who was at enmity with some other person. The Indians in explanation pointed out that it was for the purpose of enforcing peace in a man's actions and thoughts that he was forbidden to take weapons in his hand ; and the coal of fire placed before him while sitting in his tent was indicative of his setting himself apart for this religious duty, "the coal being like a partition between the father and all the world."

During these intermediate months, the family are busily employed making eagle war bonnets, embroidering mooccasins, tobacco pouches, tobacco boards, fashioning pipes and ornamenting clothing and gathering together a large amount of possessions to be

given away at the closing ceremonies. After a ghost lodge a family are often left in poverty, but with the Indians it is not accumulation and hoarding, but the record of that which a man has given away which entitles him to greatness and influence.

Any one of the same gens⁶ as the father, who had lost a child, after the ghost lodge had been inaugurated and who desired to join in the ceremony, could prepare a similar pack, and tie it to the one in the ghost lodge. Each family thus represented must contribute its quota of gifts at the final day.

As that time draws near word is sent abroad, inviting members of other gens, and even of other tribes, to be present and participate in the feast. Four days the crier proclaims the opening of the packs and distribution of the gifts, and during these days the families are busy preparing for the coming feast. A man who has successfully kept a ghost lodge is invited to take charge of the proceedings. For this service he receives large presents from the parents represented in the lodge. To give an idea of this payment the following list of articles was received by the man having charge of the ghost lodge herein described.

Four garnished buffalo robes embroidered with porcupine quills, four woven sashes, four calico shirts, four pipes, four plugs of tobacco, four hatchets, six pairs of moccasins, six dishes, six tin pans, seven yards of calico (a dress pattern), ten butcher knives, two pairs of leggings, two strings of bells, two curtains (strips of tent cloth used to protect the sleeping place), two comforters (bed quilts), one lariat, one hoe, one bed made of reeds, one steer, two or three ponies.

Among the articles given away, the following were counted.

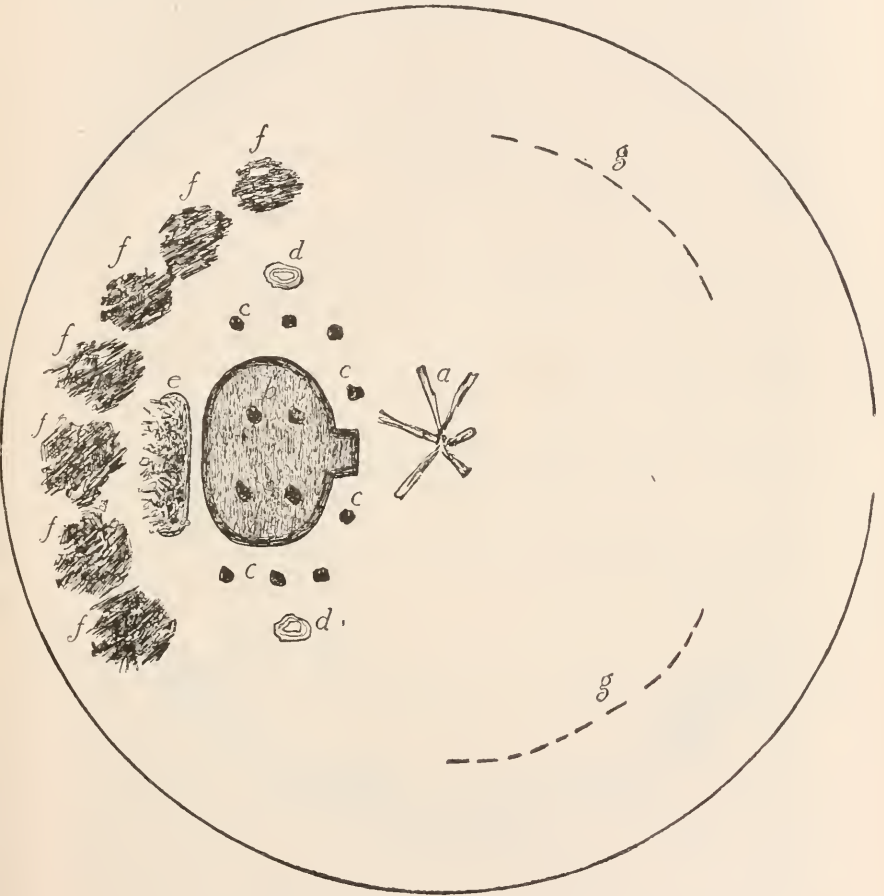
Thirty-two ponies, one hundred pairs of moccasins, ten shawls, seven buffalo robes, three war bonnets (eagle feathers), eight calico dresses (made up), besides numerous tin pails and cups, knives, coffee pots, tin pans, looking glasses such as the young men wear, embroidered beaded dresses, knife cases, match pockets, bows and arrows, wooden bowls, balls, shinny sticks embroidered with beads, a quantity of dried cherries, squash, pounded meat and other things.

From early morning to well on toward noon the women were

⁶ It was only the Indians of one gens or clan who joined in this ghost lodge. Further investigation will prove whether this is always the rule among tribes which hold similar lodges.

engaged carrying these gifts singly, in packs made of raw hide, or in wooden trunks, and placing them at the door of the new tent set up to receive them. On this final day all signs of mourning are put away, for the first time since the death occurred the

FIG. 2.



Arrangement of the tent set up to receive the gifts.

immediate relatives braid their hair, and every one is in gala dress. Over 800 people gathered to the feast, and were scattered over the grass. Forty-two great kettles hung from crotched sticks, the beef soup and dog stew flavored with dried cherries or turnips

sent up fumes of steam. The sticks used to stir these viands were forked, having the end ornamented with beads and ribbons. Young girls were bringing water from the creek, the older ones grinding coffee, and all busy preparing for the great crowd of guests. The abrupt outline of the buttes, dark evergreens marking the gullies, the narrow valley through which flowed the clear rapid creek with its border of shrubs and large graceful trees, the green bottom lands dotted with white tents, while a few were scattered over the hills that rose in terraces to the east, together with the vast throngs of gayly dressed Indians, combined to make a picture full of color, spirit, and a wild beauty all its own, bearing no familiar lines to eastern civilized eyes.

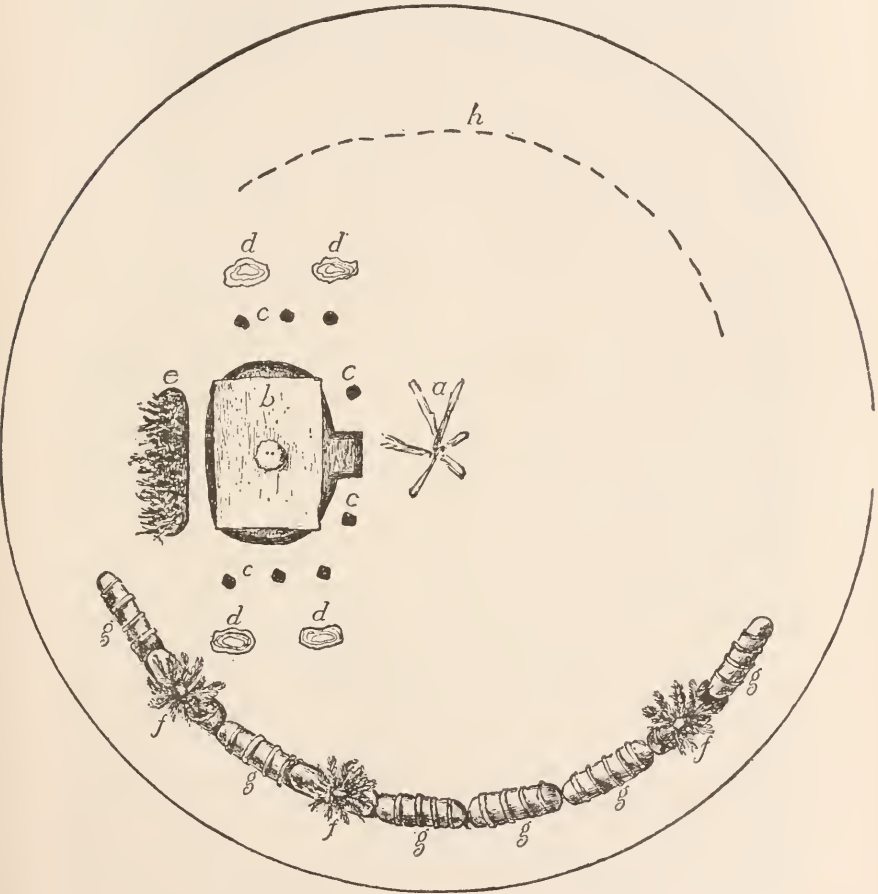
The new tent set up for the reception of the gifts (fig. 2) is placed near the ghost lodge tent, the door facing the east. Near the centre a fire is kindled (fig. 2, *a*), an oval figure drawn on the ground (fig. 2, *b*) similar to that cut on the floor of the ghost lodge. The sod is removed from within the figure, the earth mellowed, four live coals laid on the mellowed earth and sweet grass dropped on them. Outside the figure eight coals are placed, four on each side (fig. 2, *c*), and sweet grass laid on to smoulder.⁷ On the north and south side a buffalo chip is set (fig. 2, *d*). Back of the oval figure the sod is removed so as to leave a narrow, oblong figure in the earth on which sprays of *Artemisia* are spread like a mat (fig. 2, *e*); behind this the presents are arranged in piles (fig. 2, *f*), one pile for each ghost represented in the lodge.⁸

⁷ The protective purification and consecration, secured by fire and sweet or aromatic smoke is noticeable throughout this ceremonial, and the number of small fires and their positions seem to indicate a connection with the worship of the four quarters or winds.

⁸ The traditions concerning the ghost lodge are as follows: Long ago the Dakotas lived in one village and had seven council fires. When they broke up and parted each division received certain gifts. To these particular Indians were given the pipe and the mystery of the ghost lodge. One version says: Two warriors were returning to the camp, when they were met by a woman who said: "When you return, cause a tent to be pitched within the line of tents, and I will come and tell you what to do in the tent." Although alarmed at being thus accosted, the warriors did as they were directed, and the woman came as she had promised. They entered the tent with her and she then revealed the mystery of the ghost lodge, and gave them a pipe, saying: "When you cease to do in this way I have told you, the people will no longer live." She left the tent and vanished in a cloud. Still another version states, that one day there was a woman, wearing an apron of *Artemisia*, and wrapped in a buffalo skin having the hair outside and the horns left on. She was holding the head in her left hand and the tail in her right, her left hand crossed over the right, and on her left arm she had a buffalo calf, together with a pipe, the two lying side by side. Four days she tarried with the Dakotas and taught them how to keep the ghost lodge, and left them with the words: "When

After this arrangement is completed a feast is given and while that is in progress the women set a row of crotched sticks in front of the tent, laying on poles to form a framework, on which they spread for exhibition the gifts they had previously made

FIG. 3.



Arrangement of the ghost lodge at the concluding stage of the ceremony.

a mule shall bear a foal then will come the destruction of the earth." Some Indians declare that if the father faithfully performs all the duties and ceremonies of the ghost lodge he thereby averts from his child any punishment or bad consequences which would result from misfortunes or disasters received in this life.

In these accounts it is both curious and instructive to note the traces of the early missionaries interwoven with native tradition.

into piles at the back of the tent. When the feast is concluded, the master of ceremonies distributes these gifts, reserving those which are to be given away in the ghost lodge tent. Visitors and the poor are remembered in the lavish bestowal.

The interior of the ghost lodge (fig. 3) is rearranged in the following manner. The space occupied by the packs is marked off in an oblong, the sod removed and the ground spread with *Artemisia* (fig. 3, *e*). The figure having the mellowed earth in which the offerings of food have been buried each day, is covered with a red cloth. On the centre is laid a disk of shell (fig. 3, *b*); eight live coals, four on each side, are arranged outside the figure, and sweet grass laid on them (fig. 3, *c*). Four buffalo chips are outside of these at the four corners (fig. 3, *d*). The different packs are loosened from the initial pack and each one fastened to sticks about four feet long. There were nine packs, three belonging to young men (fig. 3, *f*), three to boys, two to girls and one to a woman (fig. 3, *g*). The sticks are bound with hide, and an oblong piece of hide, ornamented and having on it a face rudely outlined in paint, is hung in front of each pack. Upon the packs belonging to the young men are fastened eagle feather war bonnets. These effigies are arranged in a semicircle on the south side of the tent, the sticks being thrust in the ground, and the gifts contributed by the relations of the dead person piled about his effigy.

Only men who have kept a ghost lodge are entitled to sit in this tent, and join in smoking the pipe which had been filled with the appropriate ritual. Their position is indicated in fig. 3 by the letter *h*. The man in charge of the ceremonies distributes the gifts which rest about the effigies to the men present. In so doing he is particular so to dispose of the articles as, for instance, to avoid giving an eagle war bonnet to a man who had received one on a previous and similar occasion. Such items are well remembered in an Indian camp, for it is in this way that possessions change hands. The men who receive at this time will save up their treasures and give them away at some future religious or secular festival.

When all the gifts are distributed the packs are opened, the pipes are given to poor men, and the hair once more handed back to the mother who either keeps it, or buries it, and the soul of the child, which has been supposed to linger about the pack, is now free to depart.

The shadows were gathering in the valley and the last glow fad-

ing from the buttes, as the tents fell and the poles were gathered and carried off by their possessors, for not an article used in this strange ceremonial remained in the possession of the parents who had thus paid to the full their tribute of affection for the dead, and proved themselves faithful to the custom of their ancestors. The stars came out and shone over the silent plains, for the men, women and children had vanished with the day.

THE "WAWAN," OR PIPE DANCE OF THE OMAHAS.¹

BY ALICE C. FLETCHER.

"Wa-wan,"² means, "to sing for some one." The ceremony of which this is the name was one of the means in ancient times by which possessions were accumulated and exchanged, and honors counted and received. In a tribe one gens would sometimes "pipe dance" another gens; the ceremony, however, was generally exchanged between different tribes. The wa-wan party carries to the person visited, gifts of eagle war bonnets, bows and arrows, guns, red stone pipes, tobacco bags, otter skins, leggings, buffalo robes and blankets, and receives in return, ponies. In old times, so tradition says, pottery, bows and arrows, tents and dogs³ were the return gifts.

The ceremonies of the wa-wan are elaborate and governed by strict rules, and an established ritual. Songs which have been handed down for many generations, and containing words not in common usage, form a part of the ritual and are never omitted. They are as follows:

1. The song of approach to the lodge.
2. I-he-the wa-an. Song of laying down the pipe.
3. Am-ba-i wa-an. Morning song.

¹ To Mr. Frank La Flesche I desire to acknowledge my indebtedness for most valuable assistance in the preparation of this article. His intimate knowledge of the customs of his tribe, together with his intelligent appreciation of the need of preserving an accurate account of the rites and ceremonies already becoming obsolete, make his labors in behalf of ethnological research worthy of especial recognition. To Miss Sarah Eliot Newman, of Boston, I also express my obligation for the transcription of a portion of the music. The Indian musical scale having different subdivisions from our own, the original songs lose a little of their native tone by being forced into our conventional scale. The continental sounds are given to the vowels in writing Omaha, and the italicized *n* signifies the nasal sound. *c* = sh. *x* = gh.

² The Wa-wan as herein described, with a few minor points of difference, is in use among the Omaha, Ponca, Iowa, Otoe, Pawnee and Sioux tribes. Further research may show a wider range, and its original source be discovered.

³ The old men have traditions of a different kind of dog from those at present owned among the Omahas. The former dogs are described as large and shaggy, resembling the wolf, and strong and useful as burden carriers, and noted as good hunters.

4. First and second part of the final dance.⁴
5. Song when approaching and entering the lodge of the Han-ga.
6. Han-ga ki-an wa-an. Painting the Han-ga.
7. Putting the feather on the Han-ga.
8. Han-ga the-ze wa-an. Taking the Han-ga.

Other songs are used in the ceremonies, but they are selected by the singers, and pipe bearers. The Omaha Indians have about thirty of these songs, so far as known. The tribes that practise the wa-wan have songs peculiar to themselves,⁵ and the Indians are quite critical of each other's music.

Certain articles are needful for the performance of the wa-wan rites and these must all be provided by the leader of the party. They are as follows:

1. "Ni-ni-ba we-a-wan num-ba." These two pipes are peculiar to this ceremony although they may be used as peace pipes in time of trouble and danger, when the sacred pipes are not available. The pipes are about three feet long, made of ash sapling, and have no bowls.⁶ The stem is thrust through the dried skin of a duck's neck which has the bill and feathers still on. The bill simulates the bowl. Beyond the duck-neck feathers, several large eagle feathers depend in a fan-shaped arrangement. Where these feathers join the duck-neck skin, a buckskin thong about four feet long is tied, having fastened at each end a bunch of downy feathers, like a ball. These bunches are called "we-ta eggs." Next to the eagle feathers is a cone-shaped ornament of owl feathers. These feather decorations extend over nearly one third of the pipe's length. About six inches from the owl feathers is fastened the first of three clumps of narrow strips of white

⁴ All the tribes which have the Wa-wan use the same ritual music for "Part First" and "Part Second" of the final dance, "I-man-tha-ba-jan," while the rest of the musical ritual and the dance songs are different.

⁵ The Pawnees have their own music, with the exception mentioned. The Iowas and Otoes use each other's songs. The Poncas and Omahas have their wa-wan music in common. The Sioux borrow from the other tribes, but use principally the Omaha songs. All these songs conform to the peculiar measure of the wa-wan dance ritual, but differ somewhat in style.

⁶ The stems of the pipes have holes through them so that they can be used for actual smoking. Smoking is sometimes simulated, and the obligation accepted by the symbolism is as binding as when the fumes are present. The perforation of the stem is carefully made, and the hole is frequently quite large, in order to prevent the accident of clogging. Among the Pawnees, if a stoppage occurs in smacking a peace pipe the bearer loses his life.

rabbit⁷ skin eight inches long, which hang from the stem like tassels. Red woodpecker heads are bound on the stem, one at the top of each tassel. The spaces where the wood of the stem is visible are painted in red and green stripes.⁸

2. "Jan-ja-ta." A crotched stick, made of hard wood painted red. In the crotch the mouth-pieces of the two pipes are to rest.

3. "Pexe numba." Two gourds. These are painted with a green band about the middle, from which start two bands equidistant, crossing each other at right angles over the top of the gourd, dividing the half into four equal parts.

4. "Ni-ni-ba-xte." A buffalo bladder pouch. This pouch is painted in the same manner as the gourds, and tied with twisted sweet-grass. Tobacco and "kinnekinick"⁹ are in the pouch.

5. "Ni-thu-de." A whistle of an eagle's wing-bone having at one end a white downy feather, said to be plucked from under the wing. These feathers are called "hin-xpe" in distinction from the large eagle feathers. The hin-xpe are the kind used in sacred ceremonies.¹⁰

6. "Hin-xpe tha-bthin." Three feathers, one for each of the two pipe-bearers, to be afterward used by the two dancers in the final dance. The third feather is worn by the runner, afterward by the wild-cat skin bearer during the ceremonial approach to the lodge, and laying down the pipes for the first time; finally it is worn by the han-ga, or child of the man who receives the wa-wan party. These three feathers are tied to the pipes when not being used as described.

7. "Wa-ha-ba." An ear of corn, white, without blemish and very full, and called the mother. A green band is painted around the middle from which four stripes extend to the top of the ear. The ear of corn thus decorated, like the gourd and bladder pouch,

⁷ The skin used in making the tassels is from a large rabbit called by the Omahas "Man-stin-ska." The part cut into strips is taken from the breast of the animal.

⁸ These pipes are costly and the various articles needful for their manufacture are bartered between different tribes. Only a man who has given away horses, or proved himself valiant in battle, or prudent in counsel, can make one of these pipes. The honor, therefore, lies in being able to make a pipe, as a comparatively unimportant person can receive one as a gift.

⁹ "Kinnekinick," called by the Omahas "ni-ni-ga-hi," meaning "to mix with tobacco," is made from the inner bark of the dog-wood, and dried in narrow strips over the fire, on a sieve shaped like a battledoor and made by interlacing thin pieces of wood. The dried curled strips are powdered between the fingers.

¹⁰ When the whistle is laid upon the wild-cat skin the feathered end is placed toward the east in the same direction as the mouth-pieces of the pipes.

is tied around the middle by a buckskin thong to a stick about a foot and a half long and painted red.¹¹

8. "In-gthan-ga-ha." A wild-cat skin¹² within which all the foregoing articles are wrapped. During a part of the ceremonies in the lodge the skin is spread and certain of the articles laid upon it.

Eight to twelve is the usual number of a wa-wan party. Occasionally one or two wives of the men accompany to attend to the cooking, setting up the tent, etc., but generally the men go alone and do all the work.

Certain duties and forms are observed from the time of starting on the journey, and rites are performed *en route*. The ritual of the wa-wan begins with the peculiar approach to the lodge, set apart for the party on their arrival about sunset at the camp circle of the tribe visited. The ceremonies continue for four nights and well on into the day following the last night. At the conclusion, the party return home at once, being careful to leave the camp circle before sunset.

When a man decides to inaugurate a wa-wan party, he mentions his intention among his friends, but invites no one to join him. Those who are inclined to accompany him, volunteer to do so. Each one of the party must contribute his quota of gifts, these are sent to the man who inaugurates the party and who is called "Nu-dan-han-ga," or leader. For several nights before starting the party meet to rehearse the songs of the wa-wan. It is a point of honor to have the ceremonies pass off creditably.

On the day of starting, the leader selects one of the party to carry the wild-cat-skin roll. It is slung across the man's shoulders like a quiver. The needed provisions for the journey and the feasts to be given during the visit, and the gifts accumulated, are tied in bundles and packed upon ponies, and the company move out of camp amid the good wishes of their friends. Should game be plenty a little hunting is permissible but on no account must any one of the party drink water from his hand, or use any for washing until the close of the ceremony.

¹¹ The figure drawn upon the tobacco pouch, the two gourds, and the ear of corn, is the cross, indicating the four quarters. The use of the color green has already been mentioned. The sweet-grass braid which ties the pouch is invariably used in sacred ceremonies.

¹² The skin of the small wild-cat is used by all the tribes which practise the wa-wan. So far as I have been able to learn there is no choice of skins allowed. Among the Pawnees the wild-cat must be shot by an arrow, the Omahas have the same regulation.

During the journey should the weather be stormy for several days, the party halts for the rites of augury concerning their success, but if the sun shines this observance is deferred until within twenty-four hours of their destination, when the following ceremonies take place :

Soon after dawn the buffalo bladder pouch is taken from the wild-cat-skin roll and given to one of the elder men of the party, who is selected to be the "Ni-ni-a-thin," or runner, to carry the bag to the lodge of the man whom the leader has determined to visit in this ceremonial manner. The runner is clad in leggings, breech-cloth and moccasins; a buffalo robe, hair outside, is tied about his waist with a buckskin thong, the tail crossed over his breast from right to left and passed under the thong, the head end hanging over the left shoulder and wrapped about the figure.¹³ The hin-xpe is tied in his braided scalp lock. This costume indicates his official character. Three young men are selected to attend the ni-ni-a-thin, and are attired in the same manner with the exception of the hin-xpe.

On arriving at the camp circle the four men walk in single file to the lodge of the designated man, and after entering, the ni-ni-a-thin delivers an address and presents the pouch to the host. This is the manner of asking whether the honor of the wa-wan will be accepted or not.

The demands made upon a man who accepts the pouch are heavy, therefore he always consults his near of kin and the leading men of his gens, for according to the law of kinship, their help is expected. Soon after the arrival of the runner and his followers, the host sends for his relatives; when they have assembled the pouch is laid before them and the proffered honor deliberated upon. A wa-wan party of ten would require the gift of from twelve to thirty ponies, and the host, or as he is called by the wa-wan party, "I-ni-thi" (his son) usually gives his best horse to the leader. It is a point of honor to respond liberally to a wa-wan party. If however a man should accept the honor and give but a half dozen

¹³ The manner of wearing the buffalo robe as described is peculiar to sacred ceremonies. As all serious enterprises are closely connected with religious rites, the robe is worn in this way at councils when chiefs are chosen, when the duties of the Nu-dan-han-ga or Leader of the Hunt are accepted, and when the runner of the wa-wan is dispatched. In wearing the robe thus there seems to be the idea of recognizing the power made known in animal life, and man's dependence upon food for health and strength. This idea is more clearly set forth when taken in connection with the attitudes assumed while the robe is thus worn during religious ceremonies.

horses, the leader of the wa-wan would be justified both by usage and public sentiment in refusing to complete the ceremonies. He would in that case take the ponies already presented and retire from the camp, with his pipes, etc. The gens would thereby suffer disgrace for presuming to accept an honor they were unable to meet.

The wa-wan can be refused honorably for two reasons. The recent death of a near relative, the family being in mourning and not joining in festivities, and, the decision of the leading men of the family and gens that they are too poor to make a response commensurate with their position and that of the leader proposing to visit them. When a refusal has thus been decided upon, sometimes one of the men will say: "We are too poor and cannot accept the honor, but, the man shall not go away empty handed. I will give him a horse." The pony is brought to the lodge and the runner and his followers take the horse, and return with the pouch to the wa-wan party and repeat to the leader the message sent. The expedition is given up for that time and the party go home at once or else visit the tribe unofficially for a few days. If the kindred and gens decide to accept the wa-wan, the pouch is retained by the host and the runner sent back with the words: "Tell him (meaning the leader) to come. We are ready for him."

Shortly after the departure of the runner, in the early morning, the wa-wan party prepare for the ceremonial of the augury "Wa-the-gthan." One of the older men, after all are seated, fills a pipe and passes it to the one of the party having the gift of prophecy, who taking the pipe tells the bearer of the wild-cat-skin to unfold the roll and spread the pipes. The skin is laid down some ten or more feet from the group, the head pointing in the direction of the tribe about to be visited. The crotched stick is thrust into the ground at the head of the skin, and the mouth-pieces of the pipes are crossed and rested in the crotch, the other ends of the pipes touching the skin. In the flare of the pipes the two gourds are placed side by side, and the whistle on the neck of the skin. To the right the ear of corn stick is set. In front of the skin a circle of about two feet in diameter is drawn upon the ground having an elongated opening toward the pipes, the sod is removed from within the outline and the brown earth exposed.¹⁴

¹⁴ The form cut in the ground is like that used in the Ghost Lodge and other ceremonies of the Ogallalas. In the tribal sacred festival of the Omahas the ground is mellowed near the sacred pole, where the white buffalo skin is exposed, and a similar figure drawn.

When these arrangements are completed, the man gifted with power to prophesy rises from his place and approaching the pipes, walks to and fro behind the skin, holding the mouth-piece of the filled pipe toward the sky. As he walks he sings the song sacred to his personal vision. After ten or fifteen minutes, he halts and calls the young men of the party to him saying: "Come! I will tell you what I have seen." He then recounts how he has seen, as in a mist, a number of horses approaching the pipe of the leader, and describes them. After this recital he lights the pipe, and the party smoke together. The augury is not always propitious and stories are told of the prophet foretelling the refusal of the bag, or that an inadequate number of horses would be given and the consequent failure of the wa-wan.

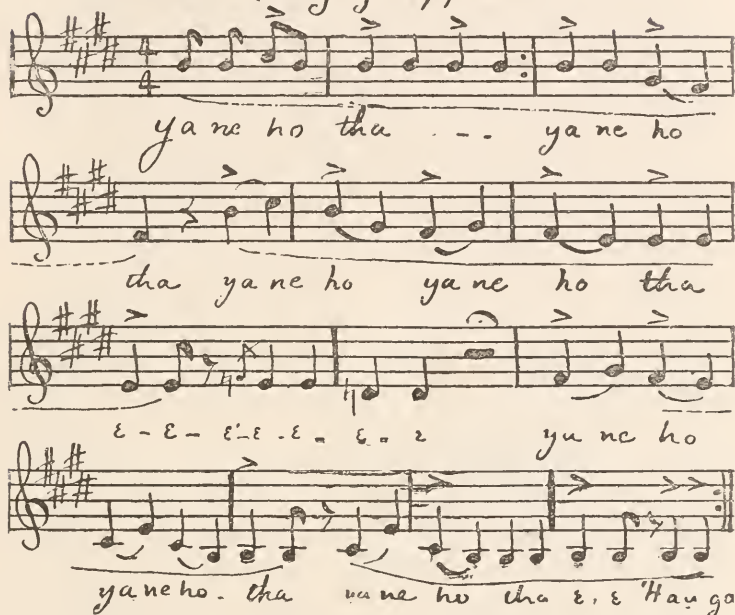
When the augury is over the pipes, gourds, sticks, etc., are returned to the wild-cat-skin roll, and the party move on. When within a mile or so of the camp they are met by the runner with news of the pouch. If he brings the message of acceptance the party continue their march until within sight of the camp-circle, when they halt and await the coming of the messenger from the host. On his arrival he informs them which lodge has been set apart for their use, bids them advance, and departs as he came.

The leader then selects two men who are good singers and dancers to carry the pipes and lead in the ceremonial approach to the lodge, and in the ceremonies of the first three days and nights. These two men and the bearer of the wild-cat-skin roll, dress themselves in the same manner as the runner when on his official errand. The buffalo robe is worn as before described, except that the head end is passed under the thong leaving the neck and arms of the men bare. The *hin-xpe* feathers are tied in their long braided scalp locks. The pipe bearers hold the pipes in their left hands, the mouth-pieces presented toward the line of advance and the gourds are grasped in their right hands. The wild-cat-skin bearer carries the roll slung across his shoulders. Only these three men wear the buffalo robe. The two pipe bearers lead, and the rest of the party follow in groups, the leader bringing up the rear.

On reaching the camp circle or open space, the ceremonial of approach is begun. The two pipe bearers walk abreast, presenting the pipes, and begin the song of approach, keeping time to the music by a slow sliding step, a rhythmic movement of the body, the

swaying of the pipes and the tremulo of the gourds. The song sung at this time belongs to the musical ritual and is never omitted. It is considered to be old.

Ritual. Song of Approach.



The two pipe bearers sing the song slowly. At its close they halt, and the entire party come to a standstill. After a short pause, the pipe bearers begin the song again, moving on as before, and at the close of the song the halt and pause are repeated. The song is sung four times, and the last halt is made at the door of the designated lodge. This ceremonial approach occupies nearly half an hour, and requires good management in order to get over the ground, observe the pauses, the time of the music and arrive at the lodge when the fourth halt is due.

The two pipe bearers enter the lodge (Fig. 1) and pass round by the left, back of the fire which is burning in the centre of the floor. The bearer of the skin takes his place between the two bearers of the pipes. The roll is taken from his shoulders and opened. Holding the neck of the skin in his left hand, and the middle of the back

by his right, he lays the skin down, the head to the west, about three feet behind the fire. The crotched stick is thrust in the ground at the tail of the skin and at the right of it the stick with the corn is set in the floor. One of the pipe bearers begins one of

FIG. 1.



Arrangement of Lodge of the Wa-wan party.

a. The fire. *b.* Wild-cat-skin. *c.* Crotched stick. *d.* Two pipes (the peculiar feather ornaments are not indicated). *e.* Two gourds. *f.* Whistle made of wing-bone of an eagle. *g.* Ear of corn tied on the painted stick. *h.* Tobacco pouch. *i.* Position of Wa-wan leader. *j.* Wa-wan party. *k.* Drum and drummers. *l.* The host. *m.* Young braves of host's party. *n.* Kindred of host and head men. *o.* Position of dancers of the fourth night when sitting. *pp.* Direction of dancing by the two dancers on the fourth night, one on each side of the fire. *qq.* Poor of the gens and tribe.

the ritual songs of laying down the pipes¹⁵ and sings alone ; the first two bars are accompanied by the skin bearer, who gives with the whistle a rapid presto note. On the repeat the two pipe bearers begin the song together without the whistle and proceed to the end. The pipes are swayed, and the tremolo of the gourds given during the singing. The song is repeated four times ; during the fourth time, the pipes are circled over the wild-cat-skin like an eagle circling over its nest, the circles are made lower and lower, until at the close of the music, the pipes are gently laid upon the skin, as the bird would alight on its nest. The mouthpieces of the pipes rest upon the crotched stick and the bowls on the shoulders of the skin, the gourds and the whistle are placed as during the augury ceremony. The three *hin-xpe* feathers are removed from the scalp locks and tied to the pipes, and not used again until the fourth night. The space between the articles thus arranged and the fire is never stepped upon.

The ponies are unpacked, the bundles of provisions and gifts brought into the lodge and stored at the north side, the entrance being toward the east. A drum is borrowed and placed at the left of the skin. The food for the feast is prepared and everything made ready for the evening.

About sunset the host enters the lodge passing by the left, and places the buffalo-bladder pouch, he had received from the runner, to the right of the stick with the ear of corn, and takes his seat on the south side, opposite the leader who sits on the north side of the lodge. Shortly after the kindred of the host and the head men of the gens arrive and sit at his left ; the young "braves" follow and take their place at his right ; on either side of the entrance of the lodge are huddled the poor of the gens or tribe.

The *wa-wan* party may if they choose begin to sing and dance of their own accord, but they generally wait until requested to do so. The food which is prepared for the feast cannot be eaten until some one of the host's side shall say, "Let us eat." This remark, or the request for a song, obliges the one who asks to give a pony to the

¹⁵ It is the custom among all the tribes I have studied, for one man to sing the first few bars of a song alone, and then pause, after which the song is begun again by the band of singers. In this way the leader of the singers makes known his choice of a song. There are frequently several repeats ; four is the usual number. It is during the first solo that the whistle is sounded.

wa-wan party. If the dancers do not begin of themselves, the proper mode of inaugurating the evening is for a young man, a relative of the host, to address the leader of the wa-wan, and say :

“Father, arise, and sing for us, you have come to sing and dance for us.”

The host at once rises and advances to the young man who has thus given a horse, and standing before him raises both hands, palms outward, and drops them slowly ; then passes his right hand over his left arm from shoulder to wrist and repeats the same motion with the left hand upon the right arm. He then moves along in front of his kindred and gens, addressing each one by a term of relationship and raising in thanks his right hand palm outward. Meanwhile the leader crosses over to the young man, who has given the horse, and repeats the same sign of thanks, as that first given by the host. The leader then raises his right hand palm outward, turns his body to the left, then to the right, thus covering with his thanks the host's side of the lodge. As soon as the young warrior addresses the leader, an old man from among the poor of the tribe rises and begins a song of thanks, passing out of the lodge as he sings. He introduces in the song the name of the young man. The song is sung twice, after which the old man calls out twice the name of the young man who has given the horse that all the camp may know of the act. This form of triple simultaneous thanks is observed after each gift of a horse made to the wa-wan party.

When the leader has completed his thanks he tells the bearers of the pipes and skin to get ready to dance. The bearers dress as before described except the omission of the *hin-xpe* feathers. After the pipes and gourds are taken up, the stick with the ear of corn, the tobacco pouch and the crotched stick are rolled in the skin and the crotch allowed to project from one end of the roll. The skin bearer dances between the pipe bearers and holds the skin roll with both hands accenting the time with it. The three men dance abreast moving slowly in a wide circle around the fire. They are followed at a little distance by about six of the wa-wan party who carry the drum between them and beat it in accord with the rhythm of the song which may be selected by the dancers. In making the circuit of the fire, one song is repeated four times with a short pause between each repeat. Four songs and four circuits make the

full dance. The following is one of these dance songs. The only word is at the close of the cadence, Han-ga; all else are musical

- Selection - Dance Around the Fire. Song.

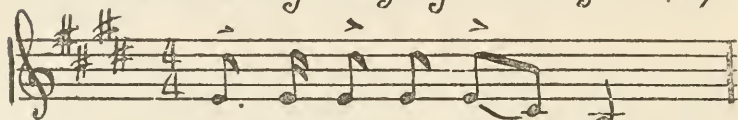
The musical score is written on seven staves. The first staff is in treble clef with a key signature of three flats (B-flat, E-flat, A-flat) and a 4/4 time signature. It contains a melody with eighth and sixteenth notes, and accents are marked above several notes. The subsequent staves are in bass clef with the same key signature. The lyrics are written below the staves, with some words underlined. The score concludes with a double bar line and repeat dots.

Ho ε yo o yo o ho i yo he - ya a ha -
 ya - ε ha ne e Tha a ya a ho ε
 Tha-a he ya tha ha yo ε ha-wi ε tha a
 ya a Han ga Hio ε ya wi he yo tha ha tha ε
 ha wi ε Tha-a-ε-ε ho o tha a
 he ya tha ha tha ε ha we ε tha tha a Han-ga.

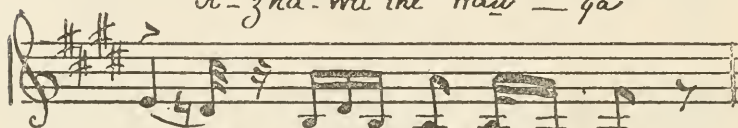
syllables. During the fourth song the movement is faster, and but three pauses are made; while singing the fourth repeat the bearer of the skin unrolls it, lays it down as before described, places the pouch and the sticks in their positions and makes ready for the singing of the regular ritual song of laying down the pipes. There are two of these songs. They are called "I-he-the-wa-an." The first has no words and is sung when the pipes are placed upon the skin after entering the lodge and whenever the

pipes are laid down before a horse has been given to the wa-wan party. After the gift of a horse has been made, the following second ritual song is used. The words are: "This is a joyful time, Han-ga." All the motions of the pipes previously described are repeated.

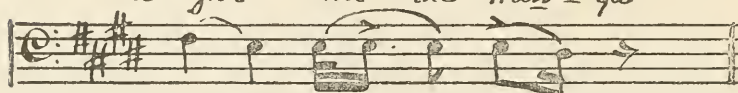
Ritual Song. Laying down of the pipe



u - zha - wa the Han - ga



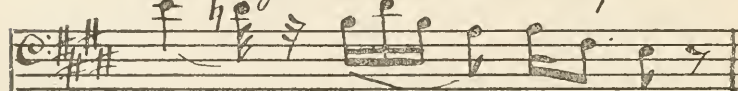
u - zha wa the Han - ga



u - zha wa the Han - ga.



u zha - wa the Han - ga



u - zha - wa the Han - ga



u - zha wa the Han - ga



u - zha - wa the Han - ga.

At any time during the festival a man who has asked for a song, thereby presenting a horse, may ask for a second song without incurring the necessity of another gift, but etiquette forbids his asking for more than two to one gift. This rule does not apply to the host. A man who has given a horse can also say; "Let us eat," without any further gift. After the first formal request already described, the customary words used in asking for a dance, and so giving a horse, are: "My father, your sons wish to hear you sing."

The leader is called "Da-di-ha," my father, and the host and his gens are sons and are addressed by the leader as "Ni-thi-ha."

A horse may also be given in the following manner:

One of the host's party goes towards the pipes, takes up the tobacco pouch and carries it back to his place and fills his pipe from it. The host at once arises and makes his thanks as described, while the old man sings his song of thanks and calls out the donor's name, and the leader expresses his gratitude in the usual way. After the formal thanks are over the man returns the pouch to its place.

Generally not more than two dances are performed during one feast. Sometimes a feast and dance take place in the afternoon: in that case there are no ceremonies in the night. Four feasts are given by the wa-wan party. The feast is eaten after the dances around the fire are concluded.

The ceremonies of a night are sometimes prolonged because of the hesitation of men on the host's side to come forward with gifts of horses. At such times the old men will rally the young men and remind them of their obligation to ancient customs. The following speech was made by an aged Omaha, named Am-ba-be-be under similar circumstances of hesitancy, when the Omahas were receiving a wa-wan party from another tribe.

"Ho! In-cta sun-da-jin ga, Han-ga-ce-nu-jin-ga e-da-be. Wa-ckan-e-gan-i-ga. In-ca-ge thi-thi-ta the-cnan tha-te-xi i-ye-de-gan a-tha-ki pa-i ha. Eo-ste ni-ni-ha the-te-thi-ze cnan-i-ha si-gthe u-gi-ha i-ga ha. Tha-ni-ta-i-te-di za-za-e i-btha ki-tha-i-ga ha. E-da-dan jin-ga a-cni-egi ga-tha-i-ga ha. Tha-ta-i-ki a-cni cna-ba-zi ta-i-te ha. Mancu-cu de the-ke we-a-ki-ci-bthan toi-te ha. In-ca-ge te gan-za-i-gan te-xi ha. Ce-nu-jin-ga! Wa za-ni! Ho! Gan wi-gi-pa-xe ta-ya-tha da-dan wi-gi-the wa-za-ni nanxi-de wi-gtha-zan-i ha.

Ho! Incta-sunda-jin-ga. Han-ga-ce-nu-jin-ga (Inctasunda, youngmen; Han-ga, young men, thus including the active men of both sides of the camp circle), together exert yourselves. Your ancestors have declared this only to be hard, and you meet it now. Even they have often accepted these pipes, follow the footsteps of those who were your fathers. While you are living make that for yourselves which brings honor and satisfaction. What little you have, give of that away. When you die you cannot take it with you. Soon we shall be mixed up with this dust. Old men have taught us that death is inevitable, and it is hard. Young men, all! Ho! This let me do for you and be done, as I make the ears of you who belong to me to ring!"

At the feasts given by the wa-wan party, only the relatives and friends belonging to the host can partake, in accordance with the custom that those who give a feast must not eat of it. The host must abstain as he is classed with the leader and his party. At these feasts the same regulation is enforced as at the feasts called "Han-gu ki-ku," during the sacred tribal festival, when the meat cannot be eaten with the use of a knife.

Two men are selected by the leader to fill the pipes of the host and his friends. The wa-wan party cannot smoke. Every morning the two pipe bearers sing the following ritual song, which is the signal for the party to rise, prepare the food and enter upon the duties of the day.

"Am-ba i-ya-tho ku-the-gan u-han-ga."

"The day is coming! Hasten and prepare the food."

When the lodge is not in ceremonial use the pipes are tied one on each side of the centre post¹⁶ by a buckskin thong passing under the cone-shaped ornament of owls' feathers. The stems are elevated toward the east. The skin roll containing the other articles is fastened a few inches below on the same post. The pipes and the roll point east and west.

While the wa-wan party remain in the host's camp they do all their own work and are obliged to render any service asked of them by members of the tribe. This affords opportunity to the small boy to play tricks and tease. He will put his head in at the lodge door and say: "Father, I want some wood!" or, "Father, I want

¹⁶ The first post south of a line drawn through the centre of the lodge, from east to west, is called the centre post. This name applies to the one in the inner circle of posts of the mud-lodge and not in the outer circle. The same name is given to the similarly situated tent pole of the tent.

some water!" and the man addressed is obliged to go and get the wood or water.

When the fourth night arrives the leader decides whether he will complete the ceremony, or withdraw taking with him the pipes, etc., the bundles of gifts he had brought and the ponies he has already received. His decision depends upon the number of horses so far given to the *wa-wan* party. If the host says that his young men have presented all the ponies they can afford and the number is insufficient to go around the *wa-wan* party, the leader declines to proceed further. If, however, the number received and those promised by the host are enough to divide, the leader prepares for the final dance. The lodge is arranged as before described, and while the feast is being made ready the host and his friends arrive. When the food is cooked it is set near the fire on the opposite side from the skin. After some one has said; "let us eat," and so given a pony, the host selects four men to serve the food. While the host's party are eating the two pipe-bearers array themselves, and voluntarily dance around the fire, singing one of the *wa-wan* songs. The following song is worthy of note for the grace and charm of its music which is as free and as tender as the breeze among the prairie blooms. The only words are: "The *ho-wa-ne Han-ga*," and the usual musical syllables. The words signify "This is what I seek, *Han-ga*."

After the feast one of the elder kinsmen addresses the host and says: "*Ke, in-da-di ce-man wa-thin gthe ta-te-ha. Gan ba-jan te ha.*" "Now let this be all that my father takes home with him. Let him sway the pipes." This speech is equivalent to saying the same thing to the leader. If this mode of address is not used, then the host will say directly to the leader of the *wa-wan*: "*Ke, da-di-ha, ce-wan wa-sni tha-gthe ta-te ha. Ke ba-jan ga ha.*" "Now, father, this is all you shall take home. Now sway the pipes."

After this speech the leader chooses two young men who take the bundles of gifts and opening them, lay the articles in a heap to the north of the skin. The leader advances and stands having the gifts at his right hand, and says: "*Hou! Ni-thi-ha the e-wi-bthin a-ti-i ha!*" "Behold sons! this is what I have brought you!" To which the host and kindred respond, "*Hou!*"

The host, or one of the principal men, selects two young men from among the kindred, and directs them to divide the gifts among

those who have given horses. These young men quietly enumerate the donors of horses, count the goods and then distribute

Dance around the Fire.

The ho-wa-ne ho-wa-ne ε o ne ε

ya a he ε ya a he ε ya a a

he ya ne ho ya a he the ho-wa

a-ne the ε Han-ga ε ya a

ho o ya a ho o tha ya a ho

ya ne ho ya a ho the ho wa-

a - ne the - c Han-ga.

them. The most valuable gifts are presented to the noted men. Should they, however, desire the credit of counting their gifts of

ponies, on a similar occasion, or, toward their "Hundred,"¹⁷ the presents they now receive from the wa-wan party must be by them given away to some one, not a relative, or to a poor person. The poor therefore often receive a portion of the gifts brought by the visitors. If the number of articles should fall short of the number required to give each donator of a horse, a gift, the host tells the young men to divide the pipes and indicates to whom they are to be given. The wild cat-skin will, in that instance, go with one pipe and the tobacco pouch and corn stick with the other. It is proper for the host to do this, as at the close of the ceremony the pipes and other ceremonial articles become his property.

After the disposal of the gifts, the leader selects two athletic young men who are to perform the dance of the fourth night and the next day. These young men do not sing: the songs are rendered by the men who sit about the drum. The final dance may be said to be divided into two parts. The first is performed on the fourth night, and is called "I-man-tha," the assurance that the dance will be completed. The second is performed on the morning after the fourth night, when the "Han-ga" or child is present. This is the true final dance and is called "Ba-jan." The young men who are to dance take off their moccasins and strip themselves to their breech-cloth, a red circle is painted on their breasts and on their backs. The *hin-xpe* are taken from the pipes and fastened in their scalp-locks.

The leader advances to the pipes and taking one in his left hand says: "When a pipe like this was brought to me, I gave" so many, mentioning the number of "horses;" here, he waves the pipe to indicate a new count, the drum is struck and he continues: "when a pipe like this was brought to me I gave" so many "horses;" again the wave of the pipe and sound of the drum. "When a pipe like this was brought" to such and such a man "I gave" so many horses, and so on. After thirty or more horses have been counted on one pipe, it is handed to one of the young men selected to dance. The leader then takes up the other pipe and continues his count in the same manner, and when he has concluded hands the pipe to the second dancer. Unless the leader of a wa-wan party be a man of distinction, he can hardly make a good showing at

¹⁷ When a man can count a "hundred," he has given away a hundred ponies or their equivalent, and he can put "the blue mark," "Kthe-xe," on his daughter, and becomes a candidate for certain tribal honors.

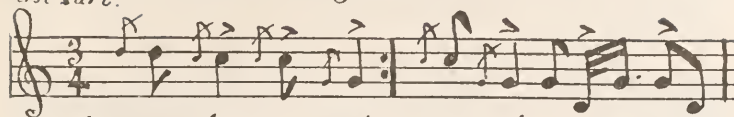
this time. If, however, the leader be a comparatively young man and just coming forward, he is often obliged to call on some of his kindred or gens to count on one of the pipes. The leader, however, must be able to outcount any member of his party, and the party must be able to count over fifty horses.

After the pipes are handed to the two dancers, the other articles except the gourds are rolled up in the skin and laid away, and one of the men seated at the drum gives the prolonged signal call, which is followed by the victory shout from the rest of the drummers. The two dancers begin to sway the pipes, and give the tremolo of the gourds, and the ritual song of the final dance is started as before described. This song is divided into three parts, the first and second parts are each sung four times, and belong to the old *wa-wan* ritual and are never omitted or varied. The third part has no fixed song, but selections are permissible. All the songs composed for this third part must, however, be in the same time, and have the peculiar call of the dancers and response by the drummers. During the first and second parts, the dancers remain sitting, swaying the pipes and accenting with the gourds until the time changes in the second part to $\frac{3}{4}$ when they rise to take a few dancing steps, after which they sit again. The first bar of the third part is sung by one man, on the repeat by all the drummers, at which the dancers rise and each one takes his place and dances on opposite sides of the fire in a line like one-half of an ellipse, advancing and returning on the same track. The movements are rapid, the knees are lifted as high as possible, the body bent forward, the arms extended and moving like wings. To suggest the eagle's movements seems to be the idea of the dance. It is during the part third song that the peculiar interruptions characteristic of the *wa-wan* ceremony take place. When these occur, the part third song is broken off at the point of interruption, and the two dancers sit. The drummers begin again at the part first, and on through part second to part third, when the unchallenged dancer rises and proceeds with the dance, while the challenged dancer remains sitting. If the challenged pipe has been returned to the dancer, he too resumes the dance on his side of the fire. This peculiar musical sequence is here given, the old ritual songs of part first and second, and a selection belonging to part third.

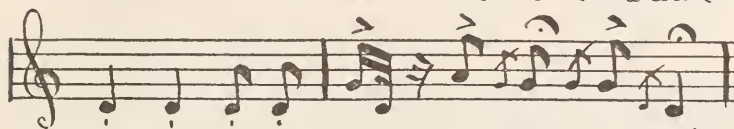
The interruptions take place as follows: one of the host's kindred or gens advances toward a dancer and takes the pipe from

Ritual-Song for Final Dance.

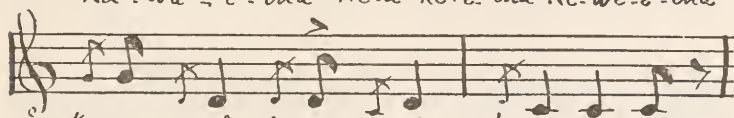
First Part.



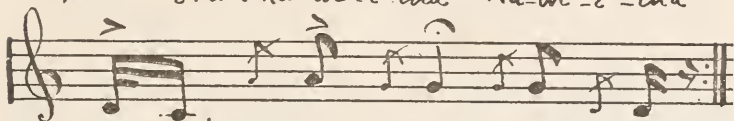
Ka-wa-ε-tha Ka-wa-ε-tha Ka-wa-ε-tha Ka-wa-ε-tha



Ka-wa-ε-tha Ke-a Ke-ε-tha Ke-we-ε-tha

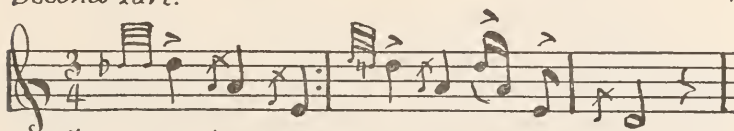


Ka-we-ε-tha Ka-we-ε-tha Ka-we-ε-tha

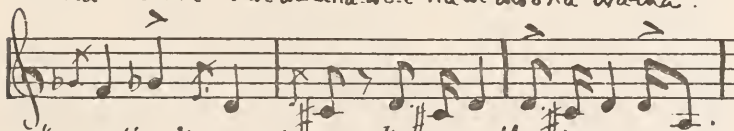


Ke-a Ke-a we-ε Ka-we-ε-tha

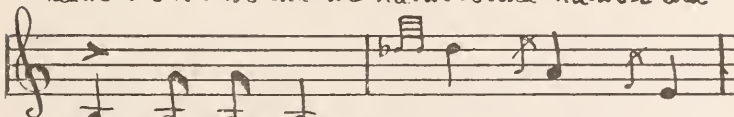
Second Part.



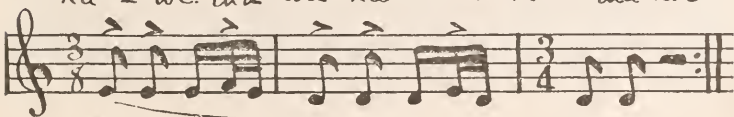
Ka we tha Ka-we-tha Ka-we-ε Ka-we-tha Ka-wa-tha.



Ka-we-tha Ka-we-tha we Ka-we-ε-tha Ka-we-ε-tha

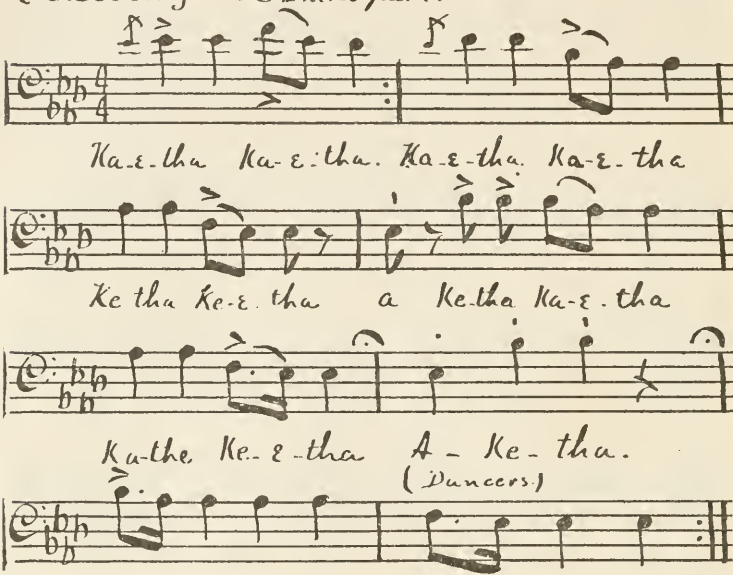


Ka-we-tha wa Ka-we-tha Ka-we-tha-we



f thi Ka-we-ε-tha-a-Ke-i tha wi

Selection for the Third part.



Ka-ε-tha Ka-ε-tha. Ka-ε-tha. Ka-ε-tha

Ke-tha Ke-ε-tha a Ke-tha Ka-ε-tha

Ka-the. Ke-ε-tha A - Ke-tha.
(Dancers.)

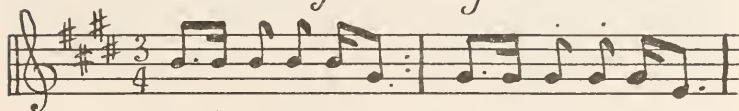
Ke-ε-tha Ka-we - tha Ke-ε-tha.
(Answer of Drummers)

him. The dancer immediately retires to his seat. The challenger holding the pipe says to the leader of the wa-wan party: "Father! a pipe like this was brought to me and I gave," so many "horses," accenting with the pipe he continues, "when a pipe like this was brought" to such a man, indicating him, "I gave" so many "horses. If you can exceed that number, take up your pipe again!" He lays the pipe down on the ground just where he had stopped the dancing and returns to his seat. The leader if possible makes answer from his own record, but if the number challenged is too large for him, he calls upon some of his party to count up the deficiency. Should the wa-wan party be unable to exceed the challenger, the man who has made it returns the pipe to the dancer and the dance is resumed. The pipe may be challenged by a man reciting a deed of valor and demanding its equal from the wa-

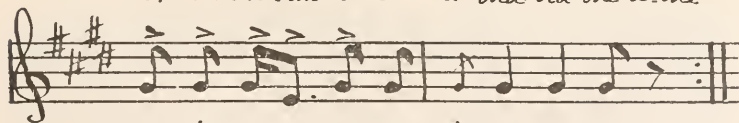
wan party. Sometimes both pipes are challenged, then the music ceases until the pipes are redeemed. Tests are played upon relatives by demanding of them a record of their gifts of horses on similar occasions. If the relative, who is generally a young man, cannot meet the challenge, he can redeem the pipe by dancing for a time in the place of one of the regular wa-wan dancers. This calling out of young relatives is accompanied by much laughter and many jokes, and adds greatly to the sport. Most of the fourth night is consumed in these ceremonies.

The next morning before sunrise and without breaking their fast, the wa-wan party proceed to the lodge of the host singing the ritual song of going for the han-ga. The third hin-xpe is taken from the pipe and together with the stick having the ear of corn is placed with the clothing which has been brought for the child. The pipes lead, carried by the two dancers of the preceding night. At the door of the host's lodge a halt is made, after which the party enter and resume the song, accompanied as before, by the swaying pipes and the tremolo of the gourds, while one of the younger children is handed to the leader to be dressed by him. This over, the party sing the following ritual song for the painting of the child, who is called the Han-ga.¹⁸ The words signify "I cause this to ad-

Ritual Song- Painting the Child:



A. tha-ha the a-the a-tha ha the a-the

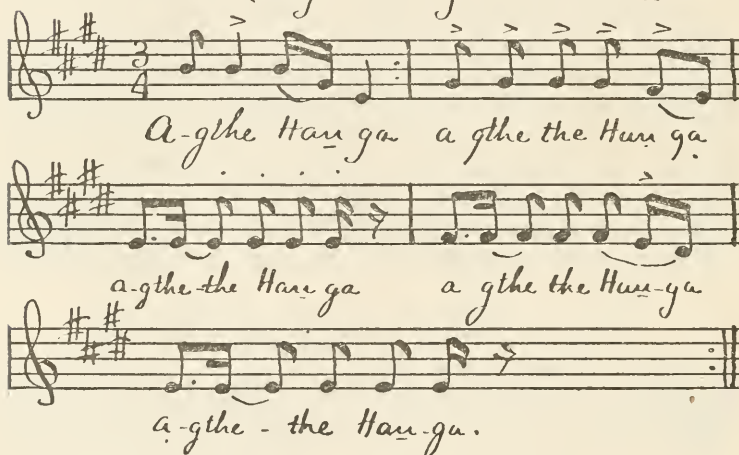


a-the tha ha a-tha-tha ha Han-ga

¹⁸ The name Han-ga given to the child is the name of the gens the third from the eastern opening of the tribal circle on the south. This gens has charge of the two sacred tents, containing the pole and white buffalo skin. The southern half of the circle of gentes is called the "Han-ga-ce-nu." "Pa-han-ga-di," signifies, "in the beginning." "Pa-han-ga, man-thin-ga," "go first." "Mi-han-ga," a woman's name of the Han-ga gens, "meaning first woman." "Han-ga" seems to indicate the ancient one or time, the leader, and has both a religious as well as a tribal and historical meaning.

here. It adheres to you Han-ga." The leader designates the man who shall do the painting and also the way in which it shall be done. The face of the child is first painted red, then a black band, about half an inch wide is drawn across the forehead near the line of the hair, from each end, a similar band is drawn down each side of the face to the lower jaw, thus forming three sides of a square. White down is put on top of the head, and if the child is a boy the hin-xpe is tied in his scalp lock, if a girl, the feather is fastened to a lock of hair growing on the crown of her head. The following ritual song is sung during this decorat-

Ritual Song- Putting on the Feather.



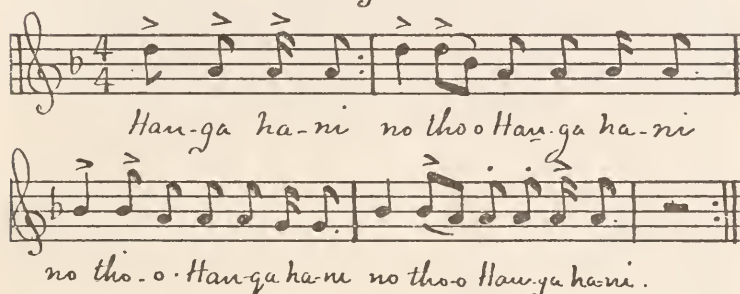
ing, and the leader calls out in a loud voice, his deeds of valor. The words of the song may be rendered: "I cause it to stand on you Han-ga."

This and all the songs are accented by the pipes and gourds. The leader selects a man to carry the han-ga on his back, bound on by a blanket in the same way as a woman usually carries her child. The wa-wan party, led by the man with the han-ga, the pipes following him, return to their lodge, and sing as they go the following ritual song:

On returning to the lodge the leader sits back of the fire in the place previously occupied by the cat-skin and holds the child in his arms, together with the cat-skin and crotched stick. The pipes

are placed just in front of him ready to be taken up. He then calls upon some member of the party to take up the pipes and count his gifts of ponies, which is done in the manner previously described. The man who thus counts continues to take the place of the leader during the remainder of the ceremonies, while the leader holds the child. If, however, there is no member of the party able to make a sufficient count, the leader passes the child over to the most distinguished member who holds the child as

Taking the Child.



before mentioned, while the leader counts upon the pipes. When this ceremony is completed the man with the han-ga seats himself outside the entrance to the left as you approach, holding the child between his knees.¹⁹ The leader takes his place in front of the entrance, on the han-ga's left hand. The two dancers sit at the leader's left, and the drummers a little back of the dancers.

The men who have given horses to the wa-wan party make ready to hand them over. The horses are generally led up to the wa-wan leader by a child, the son or daughter of the giver. As the bridle is put into the leader's hands, he takes the ear of corn, which the han-ga holds, and passes the corn down the left arm of the child who has brought the horse, and then strokes in a similar way the child's right arm, after which the ear on its stick is handed back to the little han-ga to keep until the next horse is brought up. Mean-

¹⁹ The child sometimes fails to appreciate the honor conferred and will kick and scream during the ceremony of dressing and painting, and while being carried. The older folk often tell amusing tales of their struggles when they were little han-gas, and how they were fed with the best that the wa-wan party could give to make them content. Sometimes a little fellow will succeed in making off to his playmates, who would deck themselves with the paint and feathers of the han-ga, and indulge in pranks common to childhood, unmindful of the serious ceremonies of their elders.

while the two dancers begin the "ba-jan," or final dance, which is similar to that of the preceding night and subject to like challenges, and having the same musical ritual. The members of the party not engaged at the drums are busy picketing the horses as they are brought in. Only the children who lead up the horses are stroked with the ear of corn in thanks. Sometimes a man in full gala dress, well painted and his horse also decorated, will ride up in front of the *han-ga* and there recount his valiant deeds, the drummers responding. He then rides back to his lodge and sends a gift of a horse by his child. The day is far spent before all the horses are gathered in. The ceremonial articles are left with the host,²⁰ and the *wa-wan* party hasten to leave and get on their journey. They go into camp less than a mile off and there cook and eat their first meal after a fast of nearly twenty-four hours.

The distinctive mark of a *wa-wan* party is the wild-cat-skin roll containing the pipes and the other ceremonial articles and the members are regarded by all who meet them as peace-makers because of the presence of the pipes. Should a war-party come in sight the pipes would insure safety. In such an event the warriors would make a wide detour, thus permitting the *wa-wan* group to pass unmolested, even though belonging to the tribe about to be attacked. A war-party can be recognized from other travellers by all the members being clad in white robes or blankets and having their faces whitened with clay, and the hair concealed under a white cloth bound about the head. This costume makes the men less liable to be noticed as they thread their way through the yellow grass, for after July and during the winter the prairies are of a tawny color. Should a *wa-wan* party be attacked by a war-party it would be considered a grave offence because of the dishonor shown the pipes.²¹ The homeward journey of a *wa-wan* party may be fraught with danger as the pipes have been left with the host and the party

²⁰ A man who accepts the tobacco pouch may be visited by the same *wa-wan* leader four times, who must bring each time a new set of ceremonial articles. The host, however, must never visit in a similar way the leader or his gens, as they are fathers and the host and his gens are sons, but the sons may call on the fathers to help in receiving a *wa-wan* party.

²¹ About thirty years ago an Omaha war-party soon after leaving the village encountered a solitary Ponca. They were intent on winning an immediate success and hastily shot and killed the man. On coming near the body they discovered to their dismay that the victim was the *Ni-ni-a-thin*, or runner, of a *wa-wan* party on his way with the tobacco pouch to an Omaha chief. The war-party returned at once to the village and proclaimed their deed. A few leading men started with the peace-pipes and hastened to the place where the Poncas were awaiting the return of the runner.

is therefore no longer insured against attack. Much vigilance is necessary to secure safety. When about two days' journey from the village the horses are divided among the party by the leader, who takes the first choice and those who contributed the most valuable gifts follow accordingly. After the distribution the party disband and each one speeds home with his ponies. If, however, the leader chanced to be a man highly regarded, the party will keep together and enter the village in triumph.

When the Poncas learned what had happened, they were very angry and intent upon war. The pipes were offered to each man of the party and by each man refused. Determined on peace, the Omahas again offered the pipes which were again refused, and it was not until the fourth offering of the pipes that the Poncas consented to condone the offence and the welcome symbol of smoke rose over the offenders and the offended. The Poncas were induced to return with the Omahas as guests. They were cordially received by the village and many gifts were made in testimony of the appreciation on the part of the Omahas of the wrong which had been done.

SEVENTEENTH REPORT.

ABSTRACT FROM THE RECORDS.

MONDAY, FEBRUARY 18, 1884. The Annual Meeting of the Board of Trustees was held at noon in the rooms of the Massachusetts Historical Society, Boston. Present: Messrs. WINTHROP, GRAY, WHEATLAND, SCUDDER, PHILLIPS and the CURATOR.

The PRESIDENT read a letter from the Hon. STEPHEN SALISBURY, stating that a temporary indisposition prevented his attending the meeting, which he particularly regretted as he was "connected with no other object of the kind that is so satisfactory in its system and its administration."

After the reading of the records by the SECRETARY, the TREASURER presented his report which was accepted and ordered to be printed as part of the Seventeenth Report of the Board. The CURATOR's cash account, audited by the SECRETARY in the absence of the AUDITOR, was accepted and ordered to be printed. The CURATOR then read extracts from his Annual Report, which was accepted and ordered to be printed in full, as part of the Seventeenth Report of the Board.

It was then *voted* that the TREASURER be authorized to pay the accruing income to the CURATOR to be expended for the several purposes as heretofore.

It was also *voted* that the Trustees visit the Museum and hold a business meeting there at such time as the President may appoint.

The PRESIDENT read a communication addressed to the President and Fellows of Harvard College in relation to certain provisions of the trust, which was referred to Messrs. GRAY and LYMAN as a committee of conference.

The copy of Mr. WINTHROP's communication and of Mr. SALISBURY's letter were, by vote, added to the records of the Board, and the meeting then adjourned.

HENRY WHEATLAND,
Secretary.

REPORT OF THE TREASURER.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology, in connection with Harvard University.

The TREASURER respectfully presents the following Annual Report:—

Income Account.

1883.			
July 1.	Received Pueblo and Arkansas Valley R. R.		
	45 coupons \$35 each	\$1,575	00
Aug. 1.	“ Chicago, Burlington and Q. 4 per cent Bonds,		
	62 coupons \$20 each	1,240	00
	“ Kansas & Missouri R. R.		
	54 coupons \$25 each	1,350	00
Oct. 1.	“ Coupons United States Bonds	2	00
1884.			
Jan'y 1.	“ Pueblo & Arkansas Valley R. R.		
	45 coupons \$35 each	1,575	00
	“ Coupons United States Bonds,	2	00
Feb'y 1.	“ Chicago, Burlington & Quincy 4 per cent Bonds,		
	62 coupons \$20 each	1,240	00
	“ Kansas & Missouri R. R.		
	54 coupons \$25 each	1,350	00
			<u>\$8,334 00</u>

1883.			
July 1.	Paid F. W. Putnam, Curator,		
	Account of Building Fund	\$1,555	00
Aug. 1.	“ F. W. Putnam, Curator,		
	Account of Museum Fund	2,610	00
1884.			
Jan'y 1.	“ F. W. Putnam, Curator,		
	Account of Building Fund	1,555	00
“ 4.	“ for Fire Insurance, \$3,000 for 5 years,		
	Mercantile Marine of Boston	37	50
Feb'y 1.	“ F. W. Putnam, Curator,		
	Account of Museum Fund	2,576	50
			<u>\$8,334 00</u>

Investment Account—Museum Fund.

		Dr.	Cr.
1883.			
Feb'y 17.	By Balance of cash uninvested		\$263 75
July 26.	To Cost \$200, United States 4's at 118 $\frac{1}{4}$	\$237 50	
1884.			
Feb'y 18.	To Balance	26 25	
		<u>\$263 75</u>	<u>\$263 75</u>
1884.			
Feb'y 18.	By Balance of cash on hand.		\$26 25

JOHN C. PHILLIPS,

Treasurer.

BOSTON, FEBRUARY 18, 1884.

(335)

CASH ACCOUNT OF

Dr.

F. W. PUTNAM, *Curator, in Account with Peabody*

1883-84,

To Building Fund.

Balance on hand from last account	\$2000 07	
Received from John C. Phillips, Treasurer	3110 00	
“ Cash, discount on bill	1 04	
	<hr/>	\$5111 11

To Museum Fund.

Balance on hand from last account	476 41	
From Building Fund, 4th payment account of cases 1863-74	600 00	
Rec'd from Smithsonian Inst. for drawings and photographing . .	27 00	
Received from John C. Phillips, Treasurer	5186 50	
Publications sold	39 68	
Received cash for express paid	1 00	
Gift from a friend	33 00	
Clerical services of Assistant on salary account	65 50	
	<hr/>	6429 09

To Subscriptions for Archaeological Research in America.

Balance on hand from last account	428 92	
Received from Mrs. Susan C. Warren of Boston	250 00	
Received from Mrs. George O. Shattuck of Boston	5 00	
Received from Mrs. Clara B. Kimball of Boston	100 00	
Rec'd from Wm. B. Weedon, Esq. of Providence, 2nd subscription	50 00	
Received from John C. Phillips, Treasurer, the following subscriptions:		
Mrs. G. H. Shaw of Boston	100 00	
Dr. R. M. Hodges of Boston	160 00	
Hon. Robert C. Winthrop of Boston	100 00	
S. D. Warren, Esq. of Boston	500 00	
Geo. Peabody Russell, Esq., Isle of Wight, Eng.	100 00	
	<hr/>	1733 92

To Subscriptions for Research among Indian Tribes.

Balance on hand from last account	550 00	
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\$13,824 12

THE CURATOR.

Cr.

Museum of American Archaeology and Ethnology.

1883-84.

By Building Fund.

Paid Museum Fund, 4th payment account of cases 1868-74 . . .	\$600 00	
Cases, stock and labor	1303 17	
Painting and repairing old cases	146 93	
Furniture, stock and materials used	96 88	
Repairs on building	33 01	
Express	24 95	
E. E. Chick, part salary	500 00	
	<hr/>	\$2704 94
Balance, cash on hand to new account		2406 17
		<hr/>

5111 11

By Museum Fund.

Collections purchased and special explorations	1147 74	
Stereotyping and printing	600 00	
Drawing and engraving	99 56	
Various publications	46 80	
Library; books, subscriptions and cards	16 33	
Photographing and materials	100 73	
Diagrams, cloth, etc.	46 93	
Mounting stone idols	20 25	
Cutting meteorite	16 00	
Stands for Crania	17 16	
Postage, telegraph, telephone, express	236 03	
Stationery, twine, etc.	9 93	
Paper trays	19 75	
Water tax	25 00	
Fuel and gas	181 01	
Extra labor	9 26	
Incidentals	25 75	
Salaries	3800 00	
	<hr/>	6418 23
Balance, cash on hand to new account		10 86
		<hr/>
		6429 09

By Subscription for Archaeological Research in America.

Explorations in Central America	652 80	
Explorations in Ohio and Tennessee	940 57	
Explorations in New Jersey	75 00	
	<hr/>	1668 37
Balance, cash on hand to new account		65 55
		<hr/>
		1733 92

By Subscription for Research among Indian Tribes.

Amount to new account	550 00	
	<hr/>	\$13,824 12

I have examined this account, with the vouchers, and find it correct.

HENRY WHEATLAND.

Feb. 18, 1884.

REPORT OF PEABODY MUSEUM, III. 22

REPORT OF THE CURATOR.

*To the Trustees of the Peabody Museum of American Archaeology
and Ethnology:—*

GENTLEMEN:—The explorations which were carried on in 1882 by means of the liberal subscriptions of several friends of the Museum, whose names are given on page 158, have been continued to the full extent of the means at our disposal, during the past year, and most important results have been obtained with the aid of the pecuniary assistance which was so timely given; but, unfortunately, it has not been sufficient to enable us to complete the work in the Little Miami valley;—a work which has developed on our hands as the explorations proceeded, until we have been led to subterranean explorations where at first we supposed that all of importance was to be found in the tumuli above the level of the surrounding land. Now, just as our means have given out, we have come to such an important subject for investigation that to stop the work will be a discredit. I have been twice to the Little Miami valley since your last annual meeting to look after the work in person, and Dr. Metz has been on the ground almost daily between my visits, so that the work has been conducted in a thorough and careful manner whenever it was possible for the men to dig during summer and winter. We have obtained from the owner of the land the exclusive right to carry on the exploration and to remove such trees as may be necessary for thorough work, but it will cost at least fifteen hundred dollars to complete the exploration in a proper manner. Long trenches will have to be dug and thousands of cubic feet of earth will have to be turned over.

The large mound in the group of altar mounds mentioned in the last report has proved to be of a far more complicated structure than was made evident by our work of 1882. We now find that the mound is surrounded by a stone wall two feet high, which is below what at first we took to be the natural level upon which the mound was erected, and that the stones covering the mound start

from this wall. At one place the wall was higher and wider and contained a cavity in which were the burnt remains of a human skeleton, a large sea-shell, fragments of copper earrings, and a singularly carved piece of a deer's antler, possibly representing a rattlesnake. Over these remains stones had been arranged so as to form a dome-shaped covering.

Within this wall is a bed of burnt clay. This we first thought to be limited to the vicinity of the altars, but the indications now are that it covers the area enclosed by the wall. Under this burnt clay we have discovered a singular series of pits about three feet in diameter and four to nine feet deep. These pits are connected with tunnels or tubes eight feet long and a foot in diameter, having a slight dip downward from the pit and ending in a small vertical tube which extends to the "concrete" or gravel layer above the burnt clay. The walls of these pits show the effect of great heat and at the bottoms are ashes containing fragments of burnt bones. The long tunnels, or flues as we are inclined to call them, still retain their form perfectly and on the floor of each is a layer of fine ashes. At the further ends of these flues the walls are covered with a thin glossy incrustation, evidently formed by the condensation of vapors. In two instances the pits had dome-like coverings of clay, and in one of these covers were two small holes. These covered pits were, like the others, partly filled with burnt material, above which was an empty space. One of the pits without a cover had a short tube extending from it in an opposite direction to the flue. In one instance two of the pits were connected with a single flue.

Work has only just commenced on this singular series of pits, to get at which it is necessary to cut a deep trench and remove a large portion of the mound above them. We do not yet know how many there are, but eight have already been discovered. Of course the first impression is that these pits are the cremation places of the people who built the elaborate tumulus above them, but much more extended field work must be done and careful chemical and anatomical analyses be made before the purpose for which they were used can be stated. We can only say now that interesting works have been discovered and from indications in other parts of the mound, as well as in the vicinity of the pits, we are convinced that we are only beginning to understand this important group of tumuli erected over several kinds of ancient burning-places.

That there was once a wooden structure over the pits seems to be indicated by many holes in the gravel forming the natural surface, which are now nearly filled with a fine black earth which we think was in part formed by the decay of upright timbers or posts.

Another singular discovery was made while removing an eastern segment of the mound. It was found that, at some time after the mound had been completed, a large hole, about ten by fifteen feet in diameter and seven feet deep, had been dug in the side of the mound, cutting through all the upper layers, including the stone covering, down to the sand layer. At the bottom of this hole were two human skeletons, lying in ashes, which also extended around portions of the excavation, and arranged about them were sixteen human skulls without other bones. This singular burial was unquestionably intrusive, but at what period it took place we have as yet been unable to ascertain.

But I have said enough to call your attention to the importance of the work which is being done by the Museum at this place, and I can only hope that your endorsement of it will be the guarantee for its completion in a manner which will prove creditable to the Museum and of value to American Archæology. It has already shown that any conclusions drawn from our present knowledge of the ancient earthworks in the Ohio valley must be taken with proper allowance for the imperfect record of facts upon which they have been based.

In pursuance of our plan of making a thorough archæological exploration of the Little Miami valley, Dr. METZ has carefully examined several small mounds as opportunity offered during the year. One of these is situated about a mile from the village of Madisonville, in what is known as Stite's grove. In this grove are many beautiful maple trees, the largest and finest I have ever seen. Under the shadow of these old trees is a small mound not over four feet high, surrounded by an embankment of earth, enclosing an area one hundred feet in diameter. This proved to be a burial mound and in it were the much decayed fragments of several skeletons. A short tubular pipe made of stone and two perforated stone ornaments or gorgets were found with the human bones. Pieces of steatite pots and two stone pestles were found in the earth composing the mound, which had been previously disturbed. The details of these explorations with the descriptions and drawings of all the mounds and their contents will be given

when our explorations of the region are completed. It is my object now simply to call attention to the progress of the work and to note a few of the many mounds which we have already examined in the valley.

Four mounds, in group C of the Archæological Map of Anderson Township by Dr. METZ, were explored. One of these is on the farm of Mr. WILLIAM EDWARDS, who is one of many gentlemen owning farms in the valley who have given to the Museum the exclusive right of exploration upon their lands.

Mound 21 of group C was about four feet high and fifty in diameter. It proved to be made entirely of the sandy loam of the immediate vicinity. The remains of five skeletons were discovered at different points in the lower portion of the mound. The bones were nearly all reduced to dust and only a fragment here and there could be saved. There was not a single relic found with the skeletons, and a few flint chips and a broken arrowhead were the only artificial objects found in the earth composing the mound. The condition of the bones showed considerable antiquity, but their advanced decay and friability were probably largely due to the character of the soil in which they were enclosed. The position of the skeletons rather goes to show that the several bodies were buried at different times and that the mound was gradually constructed as the burials took place. For the present we are inclined to consider this mound, with some others in the valley, as a place of sepulchre by tribes of a more recent time than the builders of the earthworks of the Turner group.

Another mound, No. 22 of the same group, on the farm of Mr. SAMUEL EDWARDS, was explored by Dr. METZ and proved to be of a more interesting character than the last. This mound was fourteen feet high and about one hundred in diameter. It was composed of pure clay except in the central portion. Five feet from the top there was found a hard mass of burnt earth and ashes, seven feet deep and a little over nine feet in width and length. Resting on top of this, about in the centre and covered in part by the overlying clay, lay a large stone celt. A foot below this, in the burnt material, was a stone implement perforated at its upper end. Below this at points, several feet apart in the burnt mass, were three holes, or pockets, each of which contained the remains of portions of human skeletons surrounded by a thin layer of clay. Near the bones in the lowest pocket were three spearheads, or

chipped points. A few potsherds and several flint chips were found throughout the burnt mass. Under it was a circular bed of black soil and ashes, thirteen inches thick in the centre and fourteen feet in diameter, beneath which was a layer of fine sand and gravel, three inches thick, which covered another circular bed of black soil and ashes, fourteen inches thick in the centre and fifteen feet in diameter. Directly under the centre of this lowest layer was a pit four feet deep, ten feet four inches long, four feet wide at the ends and three feet five inches wide at the centre. This pit probably had contained a wooden structure, as its sides showed rough striations as if large logs had once rested against them. The pit had been dug in the drift gravel upon which the mound was built and was nearly filled with soft spongy ashes mixed with a reddish substance. Extended at full length at the bottom of the pit was a human skeleton with the head to the west. Among the bones of the neck a single shell bead was found; at the feet were ten stones or small bowlders such as are common in the drift gravel. It is evident that this interesting tumulus was erected over the grave which was dug in the underlying gravel, and that the human bones placed in the burnt mass above the grave, with the few stone implements found in or on the mass, had some connection with the funeral ceremonies which took place in connection with the burial of the body in the pit below. The regularity of the deposits over the pit, which was under the centre of the mound, seems to be sufficient proof of this.

Another mound on the land of Mr. SAMUEL EDWARDS, No. 23 of group C of the map referred to, proved to be almost identical in structure with the mound on Mr. GOULD's farm near Reading, of which a brief account is given in the last report (see p. 175). Neither of these mounds contained human remains; under each were four small pits, and both mounds were distinctly stratified. They still further agree in being surrounded by embankments. In the Gould mound there were five strata, in the Edwards mound there were only four. The pits under the latter contained ashes. A single stone celt was found near the surface of the Edwards mound. The mound was four feet high and sixty feet in diameter. The embankment was about two feet high, and enclosed an area two hundred feet in diameter. On the inside of the embankment was a shallow ditch. Ploughing and cultivation of the land for many

years unquestionably have reduced the mound and embankment from their original height and also partially filled the ditch.

Between these mounds and the river, about one hundred yards from the bank, on an elevated portion of the bottom land, was a mound differing in construction from any of the others explored in this vicinity. Mr. SAMUEL EDWARDS, a venerable gentleman of ninety-five years, who is still hale and active and has taken a great interest in our explorations, pointed out the mound to Dr. METZ; and his brother, Mr. WILLIAM EDWARDS, stated that sixty years ago it was about nine feet high and covered by a heavy forest growth which also extended over the region about. Over fifty years ago the land was cleared and the mound scraped down by Mr. EDWARDS, who after removing about four feet of earth from its summit came to a large quantity of stones with which were many human bones. Since that time the mound has been ploughed over and stones have been taken from it until it has been so nearly levelled as hardly to be noticed. Thus only the base of the mound could be explored, but that has proved of great interest in connection with the other works of the valley. On removing the earth around the base it was found that stones, many of considerable size, had been so arranged as to form a mound about five feet high in the centre and ninety feet in diameter, over which earth had been placed to the height of about four feet, as stated by Mr. EDWARDS. In height, about one-half of the stone portion of the mound was undisturbed. On removing the outer covering of stones it was found that many burials, probably at least one hundred, had been made in the mound. The remains of seventy-one skeletons were obtained. These skeletons were all more or less crushed by the stones which surrounded them, as, in addition to the outer stones of the mound, each body had been surrounded with stones at the time of its burial. In many instances large slabs of limestone had been used and in a few cases they were set on edge around the body. In other cases small stones had been piled around and over the bodies which had been placed in various positions, some extended and others flexed in various ways. With many of the skeletons were stone implements and ornaments, among which were several of the flat stones with two or more perforations, generally known as gorgets. There were also many bone implements, shell and bone ornaments, and cut teeth of bears. Several small cop-

per awls in bone handles, and the shells of box-turtles were also found with the skeletons. Many fragments of pottery and broken bones of animals were scattered through the mass of stones and human bones. At the feet of the skeleton in the centre of the mound there was an upright slab of limestone, two feet long by twenty inches wide, and with this skeleton were the following objects. Resting on the chest was a large ornament made from the apex of a conch shell, with a hole at one edge for suspension; below this, on the ribs, was a spear-shaped gorget with one hole, and by its side were several shell ornaments also perforated. Lying near the right femur and parallel with it, was a carved bone, grooved on the under side and having two holes; between this and the leg bone were four small pieces of carved bone about an inch in length. In the bones of the right hand was a small awl made of native copper and inserted in a little round handle made of bone, similar to others found with other skeletons in the mound. At the south side of the mound, on the original surface, was a burnt space on which was a large quantity, several bushels, of broken bones of animals, clam shells and fragments of pottery mixed with ashes. This mass seems to have existed before the mound was made, or at all events completed, as five of the burials had taken place above it. On the plain about the mound are evidences of the site of a former village, and the annual ploughing brings to light many animal remains, fragments of pottery, and stone implements of the same character as those from the mound. From this fact and from the character of the burials in the mound, as well as that of the objects found with the skeletons, and from the absence of the characteristic ornaments found with so many of the human remains in the Turner group and other ancient mounds of the Ohio valley, we are led to look upon this stone mound as the burial place of a tribe of Indians living in the region subsequent to the builders of the Turner mounds. The remains found in this stone mound, as a whole, indicate that the people here buried were closely connected with those who made the singular ashpits in the ancient cemetery near Madisonville. Limited explorations of a burial place further down the valley have already brought to light many implements and ornaments of stone, bone, shell and copper, as well as pottery, similar in character to those found in the Madisonville ashpits and in the stone mound. In connection with this burial place, the exploration of which has only just begun, I will only state that

the singular grooved implements made from the leg bones of the deer, so common in the Madisonville ashpits, have been found in this new place as well as in the stone mound.

The different periods to which the various mounds and burial places belong can only be made out by such a series of explorations as the Museum is now conducting in the Little Miami valley, and when they are completed we shall be better able to answer the question, "Who were the mound builders?" than we are now. That more than one of the several American stocks, or nations, or groups of tribes, built mounds seems to me to be established. What their connections were is not yet by any means made clear, and to say that they all must have been one and the same people seems to be making a statement directly contrary to the facts which are yearly increasing as the spade and pick in careful hands bring them to light. That many Indian tribes built mounds and earthworks is beyond doubt, but that all the mounds and earthworks of North America were made by these same tribes, or their immediate ancestors, is not thereby proved. Mr. Carr, in his recent paper published by the Kentucky Geological Survey, has taken up the historical side of the question, but it must not be received for more than he intended. He only shows from historical data what the spade and pick have disclosed to the archæologist. It is simply one side of the shield; the other is still waiting to be turned to the light, and as history will not help us to read the reverse, only patient and careful exploration will bring out its meaning.

After the meeting of the American Association for the Advancement of Science at Minneapolis, in August last, I took advantage of my proximity to the singular earthworks of Wisconsin to visit several groups of the effigy mounds which are found by the side of nearly every river and lake in the portion of the state between Lake Michigan and the Mississippi. This excursion was made in company with my friend Mr. JOHN COXE KIMBALL who also acted as photographer, and my son who rendered assistance in the explorations.

During a portion of the time the Rev. S. D. PEET of Clinton, Wis., was with us and we are much indebted to him for his guidance to interesting groups with which he was familiar, or about which he had received information. Descriptions and drawings were made of several groups not before noted, and the latter have been reproduced as diagrams for use in the Museum, and also as lantern slides.

As our excursion was one of general observation, only four mounds in one group were examined to ascertain their structure and contents. This group is situated in the city park of La Crosse, and by permission of the authorities and the kind assistance of Mr. LOSEY and Mr. E. B. USHER the mounds were carefully explored, but unfortunately they had been previously disturbed. The "effigy" in this group is of the form known as the "turtle," but it as well represents the outstretched skin of a buffalo or deer. Associated with this are three low conical mounds. In the centre of the effigy mound, which is a little over two feet in height, the remains of a human skeleton were found, with which were fragments of a pot and a small chipped implement. I was informed that from each of the conical mounds human bones had been taken. Near the surface of one we found the remains of a skeleton which was probably an intrusive burial. As the park authorities wished to resod and preserve the mounds, care was taken not to disturb the outlines and the earth removed in the explorations was carefully replaced. This is, I believe, the first record of the finding of human bones in an effigy mound, but very few examinations of them have been made of which we have any account.

At the meeting of the American Antiquarian Society held soon after my return from this trip, I gave an extended account of the excursion, of which an abstract is already printed in the Proceedings of the Society. It is therefore only necessary to refer to that publication, and to state here that among the other groups visited the most important were those on both sides of the Baraboo river.

At the foot of the hill on the south side of the river, and within the limits of the town of Baraboo, is a well defined effigy mound in low relief, in the form of a man extended upon the back with the head up the hill; unfortunately the lower part of the legs and the feet have been destroyed by ploughing. From the head to the knees this effigy is eighty-three feet in length. Extending to the north up the hill is a line of conical mounds. On the opposite side of the river there is a large group of works embracing two "long" mounds, three "bird" mounds, a "bear" mound and nearly thirty conical mounds, besides several others of which the outlines have been destroyed.

Near the Lower Dells of the Wisconsin river three very large "bird" mounds were examined, over which an old forest is still growing. On the high ground over the stone quarry at Madison

there is a very interesting group containing, among other forms, well defined effigies of a "bear" sixty-three feet long, a "panther" two hundred and thirty feet long, a "bird" seventy feet long with a stretch of "wings" of one hundred and sixty feet. Arrangements were made with Prof. E. S. HOLDEN of the Observatory at Madison for a careful survey of this group, which has been made and, thanks to his assistance, a plan is now in the Museum.

Under the guidance of Mr. USHER a visit was made to a small cave near West Salem in Wisconsin, of which a description was given in the *American Antiquarian* for June, 1880, p. 257. This cave is situated in the side of a hill and is a natural formation in the sandstone. It is of particular interest on account of numerous figures of men and animals and several other designs which have been cut upon its walls. It is probable that this work is of comparatively recent origin although the floor of the cave has been covered to the depth of several feet by the sand which had washed in at the entrance. Excavations to the level of an old water bed were made, but nothing was found. During former excavations by the Rev. EDWARD BROWN and others, a bone implement and fragments of pottery were discovered, and Mr. USHER gave to the Museum two potsherds obtained at that time.

For many years it has been my desire to examine the ancient works of the Scioto and Paint Creek valleys, many of which have become so well known from the oft-repeated descriptions and figures given by Atwater in 1820, and by Squier and Davis in their valuable work of 1848. At last the time came, and in company with Dr. C. L. METZ, Mr. C. F. LOW, Judge JOSEPH COX and Mr. KIMBALL, I made the trip in September. A brief account of this excursion also is printed in the *Proceedings of the Antiquarian Society*, and therefore only a summary of the trip is here given, simply as a Museum record, as many photographs were taken and numerous specimens obtained at the different places visited.

The "Serpent mound," on the land of Mr. JOHN J. LOVETT in Adams Co., is situated on a high bluff on the east fork of Brush Creek and is a singular and remarkable work, unlike any other in the country. The figure given by Squier and Davis, in their *Ancient Monuments of the Mississippi Valley*, is in general accurate; but we found a few mistakes had been made in the details, the most important of which is in the position of the projections from the

sides of the "head," which are not at right angles as represented in the figure, but are more nearly parallel with the main embankment. Drawings, photographs and measurements were taken of this work; for a more detailed account of which reference is made to the Proceedings of the Antiquarian Society for October, 1883.

The next place visited was the fortified hill in Highland County, known as "Fort Hill," of which an accurate description and figure are given by Squier and Davis. This is in several respects one of the most remarkable of the prehistoric works in the state of Ohio, and has not yet suffered much by the hand of man, thanks to its being difficult of access. Nature has held almost undisputed sway over the works since they were deserted, and forest trees of great age are growing upon the walls and within the enclosure. The walls of this fort are formed of stones taken from the top of the hill and from the ditch made on the inside of the walls. These walls are from eight to fifteen feet high and from twenty to thirty or more feet in width, and they enclose an area of nearly fifty acres. They are carried around the very brow of the hill, forming a continuation of its steep sides. Some conception of the antiquity of the place may be derived from the size of a decayed oak stump still standing upon the summit of the wall, which measures seven by nine feet in its two diameters, nearly three feet from the ground. This is probably the same stump which thirty-seven years ago Squier and Davis reported as having a circumference of twenty-three feet.

Several of the earthworks in the Paint Creek valley described by Atwater in 1820 were visited, but with the exception of some of the largest mounds they have been nearly levelled by ploughing and the cultivation of the land. Even the extensive stone fort on the hill near Bainbridge was reported to be so nearly destroyed that the former position of its walls could only be determined at places.

In the Scioto valley, in the vicinity of Chillicothe, are the famous and still well defined works of High Bank, Hopeton and Cedar Bank. Of these the High Bank works have suffered most by the plough of the farmer. At this place Mr. MILTON JONES received us kindly and guided us over the works, tracing out the portions that had been nearly obliterated within his time. At the Hopeton works, and those near by at Cedar Bank, we were much indebted to J. SMITH, Esq., for his kind attentions and valuable observations upon the structure of the works, with which he had been

familiar for years. Both the gentlemen named gave to the Museum stone implements which they had collected within these interesting enclosures. We also found numerous objects of interest. To Dr. MIESSE and Mr. A. DOUGLAS, jr., of Chillicothe we are indebted for valuable assistance and introductions to the owners of the different works. For some details relating to these earthworks I refer to the abstract in the Proceedings of the American Antiquarian Society; where will be found a few reasons for dissenting from Mr. Morgan's pueblo theory in relation to the High Bank works.

Another excursion was made to the Milford works, on the east fork of the Little Miami river. The square and great circle can still be traced, but their embankments are nearly levelled by long cultivation of the ground, and the parallel walls extending to the small circle on the hill, with the circle itself and the singular diverging walls running from it, figured by Squier and Davis, no longer exist. Several mounds within this work, although much reduced by ploughing, have been explored by Dr. METZ for the Museum, but few important results were obtained.

The opportunities offered by these excursions for comparing the present condition of these wonderful monuments of antiquity with their condition when first described have shown how rapidly they are becoming obliterated. A generation of men has not yet passed away since most of these earthworks were in a good state of preservation; our children's children will look for them in vain unless something is done at once to preserve them. Is it not possible to protect these ancient works before it is too late? Every year that passes without action is one more year allowed for ploughing over and destroying these wonderful works. A few thousand dollars expended *now* for the purchase of those which are best preserved will save monuments that future generations will surely value beyond all price. Shall Fort Ancient, Fort Hill, Hopeton, The Serpent, and many other ancient works in various parts of Ohio be obliterated? Shall such vandalism, such shame, be laid to Americans of this century? If the state will not take action, cannot the cities, or counties, or local societies become the preservers of ancient monuments? And Cahokia, the largest of all the tumuli of the Mississippi valley, must not be omitted when this work of preservation shall begin. Will the great state of Illinois permit this monument of another race to be levelled to

furnish ballast for a railroad ; its inevitable fate if left in private hands ! Wisconsin, too, should do her part by preserving the most interesting of the effigy groups. By Americans, who have so little of the past to preserve, these works of another race should be regarded with veneration and reverence. Of what value are our recent monuments of stone and bronze compared with these ? Would it not be well to form an association for the preservation of ancient monuments ?

Besides these explorations in the west, we are indebted to the subscribers of 1882-3 for the means of extending our researches in the southern states to a limited extent. Several more of the stone graves in the ancient cemetery on Dr. JARMAN'S farm have been opened by Mr. GEORGE WOODS, who was my foreman during my work there the preceding year, and has assisted me in several expeditions. The examination of this locality therefore has been made more complete, and it is of the first importance to make a thorough exploration of every place where work is begun.

Mr. J. W. EMMERT was also employed to explore a burial mound on Joy Creek in North Carolina, from which he obtained two pipes carved in stone, several stone implements and numerous fragments of pottery. A refuse pile on the bank of the Walango river in Custer Co., Tenn., was also examined by Mr. EMMERT and he there obtained numerous stone implements and fragments of pottery of an interesting type. Mr. EMMERT also explored for the Museum two small burial caves in the cliffs on the Holston river, Tennessee, which proved of considerable interest. The skeletons were so much decayed that only small fragments of bones were found, and the condition of the caves and the accumulations in them, showed that the burials were of considerable antiquity. Among the objects of special interest found were a large pipe made of steatite, a large obsidian core and one arrowpoint of obsidian, a beautiful polished celt made of a green stone, numerous chipped points of flint and several other stone implements ; also a perfect bowl of fine reddish clay, pieces of cut antlers and several shell beads.

To Dr. C. C. ABBOTT the Museum continues to be indebted for many valuable contributions from New Jersey. The entries in the catalogue of specimens obtained by him, and by his son RICHARD M. ABBOTT, cover more than two hundred numbers and embrace nearly a thousand specimens received during the year. Among them is an interesting collection from Somer's Point, a

locality from which we had not before received specimens. It is greatly to be hoped that the Museum will still be able to allow Dr. ABBOTT the small sum he will require for expenses incident to his collecting. His constant efforts in behalf of the Museum have resulted in bringing together a very large and complete collection from a limited region, in arranging which for exhibition I hope to have his assistance during the present year.

Supplementary to the Abbott collection from New Jersey is the HENRY R. BENNETT collection from Delaware, of which mention has been made in former reports, and I now have the pleasure of stating that Mr. BENNETT has added more than three hundred stone implements to this already large collection during the past year. It is my hope to have this also on exhibition by the side of that from New Jersey during the present year, as well as all our other specimens from the eastern Atlantic states.

Mr. LEWIS CABOT has continued to remember the Museum during his annual trips to North Carolina and has brought to us a very interesting lot of arrowpoints and other implements during the past year.

Among several other contributions from the Atlantic states I must call special attention to the little collection of rude forms found by Mr. ALBERT I. PHELPS in Revere, Mass., on a ridge back of the beach, and to a second lot from Marshfield from Mr. G. B. FRAZAR, all of which seem to have been made from beach-pebbles. To Mr. FRAZAR we are also indebted for a peculiarly interesting series of over two hundred chipped points and as many flakes, found by him on the shores of Lake Monroe, Florida, during the low water of the past summer. These specimens are all made from various forms of silicious stones, probably found in some part of the state. Many of these are fossilized corals, agates and other chalcedonic varieties, of different colors, giving to the collection a beauty and variety of color not often met with to such a degree in stone implements.

Mr. JOHN CONE KIMBALL has obtained a number of specimens from Brookfield, Mass., and other towns in its vicinity, by interesting the farmers in the objects and work of the Museum. Should his example be followed by other gentlemen in various parts of the country, many interesting specimens could be added to the Museum, which in most cases would otherwise be lost.

As is well known to you, my honored predecessor, the late Dr.

JEFFRIES WYMAN paid particular attention to the shellheaps of the Atlantic coast, and brought together a series of objects, illustrative of the primitive habits and arts of the Indian tribes from Florida to Maine, leaving an unrivalled collection of material at the Museum. It will therefore give you pleasure to know that the constant efforts which have been made to maintain the character of this collection have met with remarkable success, and that thousands of objects have been added to it during the past few years from shellheaps not before represented. During the past year the additions have been of particular value, thanks to Mr. ALBERT I. PHELPS, Mr. A. T. GAMAGE, and Mr. JAMES E. KNOWLTON, all of Damariscotta, Maine. These gentlemen have given attention to this subject for several years, and Messrs. GAMAGE and PHELPS especially have made extended trips to points along the Damariscotta river and Muscongus sound where, as stated in the last report, I also made an extensive exploration in their company. Messrs. GAMAGE and PHELPS have presented their entire collections to the Museum, and Mr. KNOWLTON has given a portion of his, so that we possess from this region a series of objects made of bone, stone and clay which is unsurpassed, and of great importance in drawing a picture of Indian life on our New England coast from an unknown period in the past down to the time of contact with our race. The evidence of this contact, during the time the shellheaps were still being formed, was mentioned in the last report, and the labors of Mr. PHELPS during the past season have confirmed the statements there made, as he has, in several instances, found iron implements and clay pipes of European make in the upper layer of shells, but in no case have European objects been found at a depth of a foot in these deposits.

In 1879, Miss FRANC E. BABBITT of Little Falls, Minnesota, made the important discovery of stone implements and chips of quartz at the depth of fifteen feet in the gravel forming the modified drift on the banks of the Mississippi river at Little Falls, Morrison Co., Minn. Since then she has made repeated examinations of the gravel, and has taken out many specimens of chipped and worked quartz from the same stratum, all of which were found in a very limited area. A series of the specimens was exhibited at the Minneapolis meeting of the A. A. A. S., in connection with a paper giving a full account of her work and containing a statement on the geological conditions by Mr. WARREN UPHAM, an assist-

ant to the state geologist. In this account Mr. UPHAM gives his testimony to the discovery of the implements by Miss BABBITT in the modified drift, and we therefore owe to her the knowledge of the existence of man at that early period in the Mississippi valley, another of the facts which are slowly but surely pointing to the great antiquity of man on our continent. After the meeting, Miss BABBITT most kindly presented the whole collection on exhibition to the Museum, and since its arrival I have again examined the specimens, and have no hesitation in pronouncing a large proportion of them the work of man. Some are simple chips or flakes, split off in the process of working the stones into shape. Others are pointed pieces of quartz, possibly with natural fractures, but which have received a few finishing blows from the hands of palæolithic men. A few others, including one or two not of quartz, are evidently natural forms, but in the collection are about a dozen of unquestionably chipped implements, which, except that they are made of quartz¹ instead of argillite, closely resemble the palæolithic implements found by Dr. ABBOTT in the New Jersey gravels. For the present I refer for further details to Miss BABBITT's paper now in course of publication by the American Association for the Advancement of Science.

In a more distant region, we are also obtaining further evidence of the antiquity of man near one of the centres of his highest development on this continent. For six years Dr. EARL FLINT has been an enthusiastic worker in Nicaragua for the Museum, and at small pecuniary outlay on our part has furnished the Museum with what is probably the most important collection ever made in that country. He has, in a very thorough manner and at great personal inconvenience and trial, explored several caves, copying with care the many inscriptions on their walls, and digging below the accumulations on their floors to discover the facts which prove their antiquity. He has dug into immense shell-heaps on the coast and sent us large series of the objects secured, among them many species of shells, some of which he thinks are now extinct on the coast. He has explored burial mounds of large size, and burial places of different kinds and of various periods, many belonging to remote times and others to the

¹ Since this report was presented Dr. Abbott has sent to the Museum a chipped implement of quartz, of identical shape and character of chipping, with two in the Minnesota collection, which he found in place in the Treuton gravel.

period since contact with the Spanish. From these sources we have received hundreds of objects made of clay, many ornaments of shell, bone and stone (the latter including several made of jadite), stone implements and other things of importance. The pottery is of particular interest, from the many great shoe-shaped burial jars to the highly decorated dishes and bowls, and the numerous carved and moulded images of men and animals. The description of these will be printed at some future time with Dr. FLINT's account of their discovery contained in his extensive manuscript journal already received. To him also we are indebted for three idols from Nicaragua. These idols are carved from large masses of basalt and represent the human form. The two larger are each about five feet in height and have recently been mounted in the main hall of the Museum. The taking of idols and other antiquities from the country has now been prohibited by law, but, thanks to the PRESIDENT of Nicaragua a special permit was given to Dr. FLINT to continue his work for the Museum for the present. During the exploration of a stone-enclosed burial place on Dead-man's island in Lake Nicaragua, a spherical burial jar was found containing decayed human bones. With these bones were several long glass and polychrome beads of old Venetian patterns, and two gold ornaments identical in pattern and method of manufacture with those found in the graves at Chiriqui. The beads of course prove that the burial in question took place after the Spanish conquest and they prove also the use at the time of gold ornaments of the character described. The scarcity of these ornaments in Nicaragua, however, seems to indicate that the original source of these two specimens was Chiriqui. In another burial place or stone-covered mound, apparently of great antiquity, Dr. FLINT has found several iron or steel implements.

It has been remarked that the present natives of Nicaragua continue to use metates or grinding stones of the same character as those found in the burial mounds, and this might be taken as an instance of the survival of ancient forms and peculiar art, had not Dr. FLINT in his manuscript called attention to the fact that the sources of supply of these essential domestic utensils are the old burial mounds, which are dug into regularly to procure them, and large numbers of elaborately carved metates are thus obtained.

Under date of December 24, 1883, Dr. FLINT has notified me of what seems to be another fact in relation to the antiquity of

man. It is no less than the finding of imprints of human feet in volcanic rock between fourteen and fifteen feet from the bottom of the surface soil. The foot-tracks are in several series, going east and west nearly parallel with the border of Lake Managua, but about 300 feet from the present shore. Immediately above the footprints is a bed of clay and volcanic material containing fossil leaves, and over this are four distinct beds of volcanic material. A box is now on the way containing four of these ancient footprints, two of which were cut from the rock by Dr. FLINT who has sent also masses of the layer containing the fossil leaves.¹

Leaving the topic of the antiquity of man, I will call your attention to the instructive researches which Miss ALICE C. FLETCHER has been making during the past year among the Omahas, Winnebagoes and Poncas, notwithstanding her long prostration by a painful attack of inflammatory rheumatism which confined her to her couch at the Winnebago Agency for nearly six months. During all that time interest in her work never flagged and she has gathered many stories, legends and accounts of ceremonies and customs of the Indians which will prove of great interest. Of this the papers printed in these reports are sufficient guarantee.

As Miss FLETCHER had visited the ancient cemetery at Madisonville, Ohio, and personally explored some of the singular ashpits of that place, she at once was reminded of them on learning of some of the past customs of the Omahas, and wrote me the following letter, which certainly throws light upon the possible

¹ Since this report was put in type the blocks of rock containing the footprints have been received, and with them several small masses of the clay and tufa with the fossil leaves and grasses from the bed above the lava-rock containing the footprints. That the imprints were made by the feet of men, while the material of which the rock is formed was in a plastic condition, there is not the least doubt. The imprints are from 9 to 10 inches long, and about 4 wide across the ball of the foot, and all are highly arched. A paper cast taken of one of the imprints shows that it is a perfect impression of a naked foot, with heel, ball and toes perfectly distinct. The four imprints received are those of two, and possibly of three, individuals. Two are of right feet and two of left. One is much deeper than the others and was made while the material was in a different state of plasticity, as the impression has forced the substance outward so as to form a ridge about the imprint. Dr. Flint states that the stride was only from 11 to 18 inches, which indicates slow walking over the plastic substance. Of course only a careful geological study of the locality will furnish data as to the age of these remarkable impressions, but there can be no doubt that they were made long before historical times. It is possible that the fossil leaves will give a clew to the geological age of the deposit, and it is my hope that Prof. Lesquereux will report upon them.

origin of the Madisonville pits, although there are a few points which must be considered regarding their being ancient caches. First, the circles indicating the sites of lodges are at some distance from the pits; second, the thousand and more pits underlie an extensive burial place where about fifteen hundred skeletons have been discovered. It may be that successive tribes have inhabited the place and that the last occupants used the site of a former town for their cemetery while their own town was farther up the hill. This supposition would agree with the condition of things already noticed in former reports, but we must also recall the fact that the makers of some of the ashpits disturbed human skeletons buried deep in the clay which indicates that there were three distinct periods of occupation of this particular point of land. All things considered, we can but agree that Miss FLETCHER's account of the caches of the Omahas suggests the most plausible theory which has been proposed to account for the Madisonville ashpits.

Winnebago Agency, January 15, 1884.

DEAR PROF. PUTNAM:

The following has come to my knowledge and may or may not throw light on the Madisonville ashpits.

The Omahas always lived in permanent villages of mud-lodges and the site of a village remains the same for a long time, only changed by some great disaster. Each mud-lodge was occupied by one or more families, sometimes as many as four or five. The lodges were often quite large and could hold a company of two or three hundred. Each family had outside the lodge a cache, and some of the families would have two. These caches would be used sometimes for two or three years, but after a time the posts would become worm-eaten or the rain get in and if the cache was not repaired, as it occasionally was, a new one would be built close beside it and the old one taken for other uses to be described. In the cache was kept the winter supply of corn, dried meat and other provisions, and the gala dresses and ornaments of various kinds. These were kept in par-flesh packs; also the sacred articles, such as medicine bags, or sacred bowls, etc. When a village was attacked it was always considered important to try and burn the caches. Fire was put in the cache and the articles consumed in the hole; sometimes they were only charred. A malicious person having a grudge would sometimes take revenge by burning a cache.

The old caches were used for ashpits. The accumulations of ashes in the centre fireplace (a circular depression in the centre of the lodge) would be cleared, and the ashes thrown in the pit. So also the bones and refuse of eating, and of feasts, and the broken implements and weapons,

worn-out moccasins, and other articles. When the pit was filled up it was closed over and another one taken. The sites of the old villages are honeycombed with these caches, the Indians say, and I am invited to examine them if I like, the Indians laughing heartily at my queer curiosity.

This account applies in several particulars to the Madisonville site. Indians of the village class love to haunt old sites, and will return over and over again to the old home after being driven away.

Sincerely yours,

A. C. FLETCHER.

To Mr. J. SUTTON WALL we continue to be indebted for photographs of the picture-rocks found in Pennsylvania and West Virginia. The last one received was accompanied by the following description:

Monongahela City, Pa., Sept. 11, 1883.

Prof. F. W. PUTNAM, Peabody Museum:

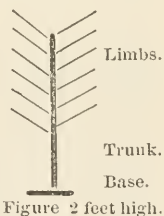
My dear Sir;

I send you by this day's mail one copy of photograph from tracing of the "Hamilton Picture Rock," which is located on the Hamilton farm, close by the north side of the Evansville pike, six miles southeast from Morgantown, West Virginia. The rock is a sandstone, and rests about seventy-five yards beyond the crest of the hill east of the Hamilton residence. The north edge of the pike passes over the south edge of the rock. There are quite a number of similarly exposed rocks distributed over the same ridge, which to all appearances are just as well adapted to carving purposes, as this one, but on only one of them (situated about fifty feet from the one I copied) did I find a figure, and that figure was the outline of a standing tree, showing the base, trunk and limbs, as herewith figured.

The outlines of the animals represented on the carved rock are formed by incised lines, from a half-inch to an inch in width, and from a quarter to three-quarters of an inch in depth. They are quite uniform and smooth in finish, and have the appearance of great age.

Mr. Thomas McBee, who lives in the neighborhood, informs me that they were much more distinct forty years ago than they now are, owing, as he says, to the fact that a few years since, the woodsmen in clearing out the adjacent land, piled up and burned the brush and refuse portion of the timber on the surface of this rock, which has caused the surface to scale off considerably, and thereby lessen the depth and distinctness of the carvings; and, indeed, the surface of the rock does present something of that appearance.

You will notice that I have numbered some of the figures on the photograph. I did this for the purpose of aiding in the following description



which is the result of my conclusions as arrived at in examining the figures as they appear on the rock.

Figure 1 represents the outline of a turkey; 2, a panther; 3, a rattlesnake; 4, human form; 5, a spiral or volute similar to that mentioned by Professor Rau, on page 11, of Vol. V of the Contributions to American Ethnology. Figure 6 represents the impression of a horse's foot; 7, that of a human foot; 8, the outline of top portion of a tree; 9, the impression of a human hand; 10, that of a bear's fore foot, but lacks the proper number of toe marks.

Figure 11 represents two turkey tracks going in opposite directions.

Figure 12 has some appearance of a hare or rabbit?

Figure 13 represents the impression of a bear's hind foot, but lacks the proper number of toe marks; 14 represents the outline of an infant human form, with two arrows in the right hand?

Figures 15 and 16 represent two of the cup-shaped depressions, similar to those mentioned by Professor Rau.

Figure 17 represents the outline of hind part of an animal.

Figure 18 might be intended to represent a horse's footprint, were it not for the line bisecting the outer curve. Figures 19, 19, represent buffalo and deer tracks.

Now it occurs to my mind that the footprint of the horse on this rock, as I have found it, is a matter of some importance, at least in a chronological point of view, if the matter can be definitely determined.

The person who made that figure could certainly not have made so close an imitation without first having seen a horse's track, which circumstance would bring the age of the carvings within the last four hundred years, or else fix it at a time corresponding with the mastodon, American elephant and ox.

Very respectfully yours,

J. SUTTON WALL.

For the numerous gifts of specimens received during the year I must refer to the list of additions to the Museum for 1883, printed on the following pages and covering several thousand objects under the 2988 entries in the catalogue. For gifts to the library I also refer to the list of additions, where are recorded the names of 117 contributors; the additions for the year being 216 volumes and 267 pamphlets.

I will, however, make special mention of the interesting collection of weapons, feather garments, gourd dishes, and other native work of the Amazon Indians; and of the grass-cloth garments, basket work, carvings on wood and ivory, trumpets made of elephants' tusks, and numerous other objects of native workmanship from Southern Africa, which were collected by the late Capt. JOHN B. SPARHAWK and presented by Mrs. SPARHAWK.

The fine series of fragments of pottery from several shellheaps in Japan, presented by the UNIVERSITY OF TOKIO through Prof. E. S. MORSE, is such a valuable addition to our previous collection illustrating the shellheaps of that country as to be worthy of special mention.

From Mr. ALEXANDER AGASSIZ we have received an interesting series of articles made by the Mayas of Yucatan.

To Mr. STEPHEN SALISBURY, JR., we are indebted for two delicately chipped specimens of arrowpoints which were found by Dr. Le Plongeon in a stone vase near the famous buried statue of Chaac-mol. These points are unlike any in the Museum. One is made of a white chalcedony and the other of a green variety resembling jadite. They are beautiful specimens of the art of stone-chipping by the builders of the ancient edifices of Chichen Itza.

Capt. NATHAN APPLETON has given to the Museum a large silver ornament which was given to him by a friend who obtained it in Peru. It is made of hammered silver and is in the form of a large disk-pin, resembling those of bronze which were obtained in the same country and presented several years since by Mr. AGASSIZ. Capt. APPLETON also has given us one of the little gold bells and several stone implements obtained from the graves in Chiriqui.

During his visit to Panama he obtained from Mr. J. A. McNiell, the well known collector, nearly four hundred specimens of pottery from the Chiriqui graves for exhibition in the Panama department of the Foreign Fair lately held in Boston. Appreciating the importance of placing the collection in some public institution where it would be made useful in the study of early American art, THOMAS G. APPLETON, Esq., of Boston, united with Capt. APPLETON, in presenting the entire lot to the Peabody Museum where it now is arranged in the room which will be opened to the public in the spring.

A study of this pottery shows that it can be grouped as follows:—

1. Jars, or water bottles, with conical or rounded bases and constricted necks. These, with few exceptions, are colored, and nearly all were smoothed, or stone-polished, before the first baking. The colors were put on afterwards and have been made nearly permanent by a second slight baking or heating. The decoration is generally of two colors. On a small number, however, red, yellow and black are combined in the ornamentation, and on a few

one color only has been used as a thin clay-wash. The patterns are generally in zones or bands; the most simple consisting of a yellow, red or black band around the upper half of the jar, or of two bands dividing the jar into three portions vertically, the central portion including the mouth of the jar. A higher type of ornament is a broad band of yellow or red, on a contrasting ground-color, extending around the upper portion of the jar, on which are various designs of another color, as red or black on a yellow band, yellow or black on a red band; or the band may be defined by black lines between which are figures in black on a red ground. The designs in most cases are made up of horizontal, vertical, and oblique lines, sometimes enclosing dots; occasionally of zigzags, by the extension of one line beyond the two adjacent in a group. On a few specimens there are combinations of curved lines forming scrolls or waved figures; in two or three instances covering the whole of the jar below the neck. In another group the ornamentation consists of arched lines, with their bases on the band encircling the central portion of the jar, and so arranged as to form a symmetrical ornament on the sides, or to divide the upper zone into three portions. A still higher type consists of three slight bosses made just above the centre of the jar and each boss ornamented by central and surrounding dots and lines. On one jar bosses in the form of two coiled serpents are moulded on opposite sides.

2. The next group consists of small cooking vessels, or pots, with two handles generally connected with the lip. These are of the usual form common in all stages of the ceramic art. The majority of these pots are simply colored red, but on a few there are bands of another color on the red ground. The handles generally are plain or simply ornamented by notches on the upper portion. There are, however, several in the lot with handles which are more elaborate, and on some they are not attached to the lip of the vessel, thereby giving a more pleasing sense of proportion. In these handles the surface has been broken by deep and symmetrical notches or lines cut in the clay, or a combination of plastic and incised work has resulted in rude representations of the human form. The limbs of these figures are entirely out of proportion, and there is little in the work showing a true perception of realistic art; it is rather rudely grotesque.

3. Of a form between the jars and the cooking pots are numer-

ous specimens which probably were used for holding and serving prepared food and drink. These are globular in shape with small mouths, like the jars in the first group. In general they are more highly ornamented than the jars, both in plastic work and in color. Many are furnished with carved handles of human form; others have two animal heads projecting from opposite sides just above the central portion of the jar; on some there is a single head, and a few have a head on one side and a tail on the opposite. Some of these vessels are ornamented with colored figures similar to those on the jars, and a few have a plastic ornament around the neck, which is gracefully incised and adds much to the beauty of the vessel. On the sides of some, instead of the human form, are little modelled figures of toads and lizards. Such ornaments were luted to the vessel.

4. Another group of vessels can be described briefly as jars with wide-spreading lips united to the sides of the vessels by broad handles which in some cases are carved. Jars of this pattern generally are ornamented in color, but a few in the lot are of plain unpainted clay.

5. Several plain dishes and cups of small size are comprised in this group, one of which stands upon a hollow base, or rim, out of which pieces have been cut. Some of the jars from the mounds in Missonri and Arkansas have similar bases.

6. This group embraces the tripods, but there are several subdivisions in it. The simplest are those which evidently were used for cooking or heating food. These are in all respects the same as the wide-mouthed cooking pots with the addition of the three legs or feet. These tripods apparently are the result of a happy thought of some ancient cook, who attached permanent feet to the pots as a substitute for the stones or lumps of clay which were required to prevent the pots with rounded bottoms from rolling over and spilling the soup while over the fire.

From these pots with simple feet the development of the potter's art can readily be traced through the various stages of utility and ornamentation, and we find the feet added to cups and to vessels of spherical forms, embracing the several shapes and particular designs already noticed.

The feet of some are solid, slightly curved and pointed masses of clay, of others they are hollow and contain little clay balls which of course were dropped in before baking the vessel. These feet

have offered a fine opportunity for the display of the sculptor's art, of which many grades are shown, from simple curved lines and notches to the representation of the human form. Several feet are carved to represent a child done up in cloths, as if tied to a cradle board, with the head free but the arms and feet strapped down; the effect being increased by a narrow band of clay wound over the body. On others only the human face is shown, and in these cases the vessel must be inverted in order to show the face in a natural position. Among these tripods are many which have not been colored, and as it is evident that new vessels were often placed with the dead, it is probable that in these instances they were used in that way directly after the first baking.

It is not possible in this brief notice of the collection to give an account of all the forms and varieties, and I will only mention in addition that very few specimens in the collection have an ornamentation made by incised lines, and these only of the most simple kind, consisting of a row of lines in small groups cut about the neck of a vessel.

As a type this Chiriqui pottery is easily recognized, and it has little affinity with that from either North or South America. Of course many of the forms are the same, but such are of cosmopolitan types which are not to be considered when tracing affinities. To that of Nicaragua it approaches more nearly than to any other group, but with this even it would not be confounded by one familiar with the pottery of the two regions. Tripods are common in both regions, and also in Yucatan and farther north in Mexico, but the ornamentation and even the forms, as a whole, differ in each locality. In its development the Chiriqui pottery seems to be intermediate between that of the northern and southern nations, as its makers were in their geographical position, and while there are some traces of a common art in the three regions, there are differences enough to show that each had a distinct development even if founded upon one original type.

The Museum has been kept open from 9 A. M. to 5 P. M. on week days, as heretofore, and the number of visitors increases from year to year. It is evident that many persons come to Cambridge especially to see the Museum, while of course the other attractions of the University bring many casual visitors.

During the past year several special parties have come for educational purposes, among them a class from the Boston University ;

and Mr. C. E. Ridler, Master of the Kingston High School, with sixty of his pupils. When notice is given of such visits it is always my effort to make them as instructive as possible, but generally too much is undertaken by the visiting parties, and the results would be of more benefit to them if they limited their examinations to one or two rooms at a visit, or only took a general glance at the whole and afterward gave their attention to the different departments in a series of visits. When I can do so I always urge this upon any school or class, for experience has shown that otherwise only a confused idea is obtained of the whole and little of importance is stored away in the brain for future use. Sometimes the same persons have been noticed at the Museum day after day, and when questioned they have stated that they were trying to study all that was spread before them. The approval of such visitors shows that the Museum has attained importance in an educational way.

Last year Dr. W. C. BARRETT, the well known dental surgeon of Buffalo, passed several days at the Museum in examining the teeth of the various races represented by our collection of crania. He since has published an article in the "Independent Practitioner" for October, 1883, under the title of "An examination of the teeth of certain prehistoric American Races," in which he presents his conclusions, with many interesting details, drawn from his study of the crania in the Museum.

Beginning his studies of these old skulls with the generally taught belief that the majority of existing dental diseases were due to the changed condition of man in civilization, he has been forced to change his view and makes the following emphatic statements.

With the exception of syphilitic diseases, there is not to-day an oral trouble with which all these nations were not familiar in its most exaggerated form.

In the jaws of all the people whose skulls I examined, I found traces of all the diseases known to modern dentistry. There was caries of the most formidable character, black, white and brown. There were marks of abscesses which devastated great regions of tissue. There was necrosis which had caused the loss of great sloughs of bone, though I must admit that necrosis was more rare than most other oral diseases. There were great masses of tartar enveloping all the teeth in the jaw. There were indications of all kinds of inflammation of soft tissues. There were

exostoses and hypertrophies, absorptions and malformations, denudations and abrasions, exfoliations and irregularities.

The following statements relating to the ancient Peruvian skulls from Ancon, and those from the stonegraves in Tennessee are of interest in connection with other studies upon these races :

Of the Peruvian skulls of adults of various ages, I made examinations, more or less careful, of two hundred, taking them as they came, and making no selection. I think they were a fair average of the whole. Of these, seventy-four had lost some of their teeth during life. Forty-three only, so far as I could discover, possessed a perfect dentition and gave evidence of healthy mouths. One hundred and two presented indications of oral diseases. The remainder were in such a state that it was impossible to determine their condition at death. Thirty-one showed extensive absorption of the alveolar process, due probably to various inflammatory conditions. In thirteen cases I found the marks of deep alveolar abscesses which had caused extensive wasting of the osseous tissue. How many others there were, not of sufficient severity to leave indelible traces upon the bone, it is impossible to say. In two mouths I found supernumerary teeth, and in two there were exostoses so great as to be visible. It will readily be understood that, as the remaining teeth were usually firm in their sockets, ordinary hypertrophies were undiscoverable without mutilation of the specimens. In fifteen cases there was no sign of the presence of wisdom teeth, nor of their loss. Seventy-two dentitions were extensively worn, some of them nearly even with what must have been the border of the gums. In five instances the wisdom teeth were in appearance but rudimentary. In eighteen cases the wisdom teeth occupied an abnormal position through lack of room for their development, and this, notwithstanding the usually massive character of the maxillæ. There were four cases of decided irregularity, not counting unimportant deviations from the normal. There were scarce any dentitions that were entirely free from tartar, and some of the mouths contained large masses of calcareous incrustations. There was at least one case of an almost complete calcification of the pulp. How many others, only an examination of the pulp chamber could determine.

Of the ancient mound-builders of Tennessee I examined the skulls of seventy-five. Of these, twenty-seven could be set down as probably free from dental diseases. Thirty-two had carious teeth. There were seven cases of extensive alveolar abscess. Twenty-two had lost teeth during life, and the consequent absorption had obliterated all trace of their existence. Twelve cases showed extensive absorption about existing teeth. There were two cases of visible exostoses, two apparently rudimentary wisdom teeth, and three irregular dentitions. Only seventeen showed depositions of tartar, and but thirteen gave evidences of much wear.

It will be seen that the teeth of the mound-builders were much more free from calcareous incrustations, and less worn than those of the inhabitants of Peru. This was doubtless owing to their living more largely upon an animal diet. There were less cases of irregularity because they were a larger and more muscular race, with broader, stronger jaws, but the proportion of diseased dentitions did not vary greatly.

Mr. CARR has continued his historical researches during the year and is engaged in tracing out several of the customs of the Indians during the early years of their contact with the whites. I have alluded to his publication on the historical evidence he has obtained relating to the Indians as agriculturists, sun-worshippers, and builders of mounds.

Miss SMITH has continued to perform her work as librarian and general executive assistant and secretary, and has made all the entries in the catalogue for the past year.

Miss STUDLEY has been intrusted with the arrangement of the osteological collection in the upper hall and adjoining room, in which she has made good progress.

Mr. CHICK has continued to give his efficient services in many ways and among other things has perfected a stand for the proper mounting of crania, so that each skull, or portion of a skull, no matter how frail it may be, can now be exhibited in its natural position, without making holes and wiring the bones. The importance of this stand will be readily appreciated by all who have the care of such a collection.

The cases in the European room, mentioned in the last report, have been completed and the arrangement of the room is in progress; the Danish collection is already in its place, and in a short time this room will be opened to the public. The completion of the cases, during the present month, in the first and second hall-galleries, will permit the arrangement of the Alaskan objects and the exhibition of the small Egyptian collection. The removal of a part of the latter from its temporary quarters in the Mexican gallery will give room there for the numerous Mexican specimens received during the past two or three years.

The old cases have all been transferred to the upper floor and are being filled with the osteological collection. The work of furnishing the only remaining exhibition room will be carried on as fast as possible, and it is probable that by the next annual

meeting every available space will be occupied by a case. After another year, therefore, it is probable that one-half of the income of the building fund can be added annually to the principal; but shall we have to wait for the slow accumulation of income to obtain the means to erect the next section of the building, the foundation of which cannot be laid too soon?

Respectfully submitted,

F. W. PUTNAM,

Curator of the Museum.

Cambridge, Feb. 18, 1884.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1883.

ADDITIONS TO THE MUSEUM.

30163 — 30228. Blow gun and arrows; bows, and arrows with bone and wooden points; pipe stems; feather ornaments for the head, neck, arms and legs; painted cups and dishes made of gourds; and pottery vases, bottles and pitchers painted in different colors, from the Indians of the valley of the Amazon. Mat, cap, and mantle of grasscloth; trumpets made of elephant tusks; numerous carved articles in wood and ivory; neck ornament of silver; sword with a scabbard of rawhide; a small basket, an ornamented box and an ornamented gourd from Loando, southwest coast of Africa. Bracelets of elephant tusks; gilt armlet and bangle of European workmanship, from western Africa. All collected by JOHN B. SPARHAWK. Piece of marble from the floor of the Temple at Ephesus, collected by LEMUEL CAPEN, and a necklace of shell, teeth and whalebone, the locality of which is unknown.— Presented by Mrs. JOHN B. SPARHAWK.

30229. Carved wooden paddle from the Hervey Islands.— Presented by Dr. W. STURGIS BIGELOW.

30230 — 30319. Fragments of pottery from shellheaps in Japan.— Collected by the students of the UNIVERSITY OF TOKIO and presented by the UNIVERSITY.

30320. A colored sash, worn by the Chippeway Indians.— Collected and presented by Prof. JULES MARCOU.

30321. Arrowhead of stone from Newburyport, Mass.— Collected and presented by Mr. ALFRED OSGOOD.

30322. Grooved stone axe from Trenton, N. J.— Collected by RICHARD M. ABBOTT and presented by EBEN PUTNAM.

30323 — 30325. Iron hoe from a mound on Halifax river, Florida; broken arrowhead and a flake of jasper, both found six feet deep under sand on banks of Mosquito Inlet, Florida.— Collected and presented by Mr. J. H. FOWLER.

30326. Large earthen bowl, red and black decoration, from a ruin near the Moqui Pueblos, Arizona.— Presented by Capt. CHAMBERS MCKIBBIN, U. S. A.

30327. Fragment of soapstone pot from New Mexico.— Collected and presented by Col. THEODORE S. CASE.

30328 — 30329. Stone arrowheads from Santa Cruz river, Patagonia.— Collected and presented by Capt. WEAVER.

30330 — 30332. Stone arrowheads from a field on Doe Creek, near Gainesboro, Tenn.— Collected and presented by Mr. JAMES D. PARK.

30333. Stone chips from Coffin's beach, Annisquam, Mass.— Collected and presented by Dr. M. E. WADSWORTH.

30334 — 30335. Broken stone pestle, and a rubbing stone from Prospect Avenue in the Cambridge Cemetery.— Collected by Superintendent CHILDS, and presented by Dr. S. W. DRIVER.

30336. A long stone pestle, from Brookfield, Mass.— Collected by Mr. MARTIN MULVEE, and presented by Mr. JOHN CONE KIMBALL.

30337 — 30348. Stone gouge; rubbing and smoothing stones; scraper and knife of slate; arrowheads of stone, and an oval stone with lines cut on it, from the farm of P. Hall, New Braintree, Mass.— Collected and presented by Mr. P. HALL.

30349 — 30359. Stone pestle and hammerstones; rude stone points and arrowheads of stone, found on the farm of Lyman Draper, Brookfield, Mass.— Collected and presented by Mr. LYMAN DRAPER.

30360 — 30370. Stone arrowheads, from Bales' Mills, Lee County, Va.— Collected and presented by Mr. JOHN H. BALES.

30371 — 30377. Large silver ornament in the shape of a pin, from Peru; a golden bell from an ancient grave in Chiriqui; stone celt and several vessels of pottery, collected by J. A. McNIEL from ancient graves at Divala, Chiriqui.— Presented by Capt. NATHAN APPLETON.

30378 — 30391. Rope, bag and fibre of the maguey; basket braided from palm; sandals; gourd cups, wooden sugar bowl; batidor for chocolate; steel machete; steel axe, an iron point, and a piece of turned wood, made and used by the Mayas of Yucatan. Hair of a Bosjeman from Africa.— Presented by Mr. ALEX. AGASSIZ and the MUSEUM OF COMPARATIVE ZOOLOGY.

30392. Knife and sheath from Assouam, Egypt.— Collected by Mrs. HELEN BIGELOW MERRIMAN and presented by Dr. SAMUEL A. GREEN.

30393. A wampum belt of the Mohawks.— Collected and presented by Mrs. ERMINNIE A. SMITH.

30394. Chinese New Year's card.— Presented by Mrs. F. W. PUTNAM.

30395. Cranium, believed to be of a Mexican Indian, from the Cemetery at Monterey.— Collected in 1848, and presented by Dr. A. E. HEIGHWAY.

30396 — 30420. Grooved axes, a celt and spearpoints of stone; perforated stone ornament, and arrowheads of stone from Miltonville, Butler Co., Ohio; part of a perforated stone ornament from Winchester, Preble Co., Ohio; scrapers, knives, spearpoints and arrowheads of stone from Boone Co., Ky.; stone arrowheads and fragments of pottery from the largest shellheap on Blennerhassett's Island; rude stone implement from Guilford, Dearborn Co., Ind.; stone arrowhead from shellheap near Fort Gates, Florida, and an arrowhead from the Falls of the Willamette, Oregon.— Collected and presented by Rev. J. P. MACLEAN.

30421 — 30439. Rude stone axe, a celt and arrowheads of the same material from Darrrtown; stone celt and arrowhead from Paddy's Run;

broken slate ornaments from near the earthworks, called "Cheraw Fort," in Oxford township, and a shell bead from Milford township, all in Butler Co., Ohio.—Collected and presented by Dr. H. E. TWITCHELL.

30440—30466. Stone arrowheads from a mound on top of a high bluff near McGregor, Iowa; a grooved stone axe, a hammerstone, drill, knife and arrowheads and fragments of pottery from localities near Prairie du Chien, Wis., and Elkport and McGregor, Iowa.—IN EXCHANGE.

30467. A notched rubbing stone, from Houghton Pond, Milton, Mass.—Collected and presented by Dr. M. E. WADSWORTH.

30468—30475. Stone flake, points, knife and a square chipped stone, from Revere Beach, Mass.—Collected and presented by Mr. A. I. PHELPS.

30476—30527. Stone axes, celts and points of different sizes and shapes; earthen pipe, and fragments of pottery; teeth of animals; shell beads and perforated shells, and a conical stone of unknown use, from a mound on Joy Creek, Madison Co., N. C.; grooved stone axe, and stone celts, mul-
lers, knives, spearpoints, and arrowheads; fragments of steatite pot, and of stone ornament; a steatite pipe and fragment of another; cut piece of antler; and shell beads; all found with decayed human bones in a cave on the Holston River, Sullivan Co., Tenn.—Collected by J. W. EMMERT and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30528—30575. Harpoonpoints and implements of bone of different forms, teeth of animals, chipped stone implements and a stone celt; fragments of pottery; piece of sheet copper; pieces of clay pipes of European manufacture; oyster shells and pieces of antler showing marks of cutting, from shellheaps near Damariscotta, Maine; chipped stones, rude and unfinished implements and arrowheads, scrapers and flakes of the same material with fragments of pottery, all from the sand ridge back of Crescent beach, Revere, Mass.—Collected and presented by Mr. ALBERT I. PHELPS.

30576—30577. Arrowheads of green and white chalcedony, both very thin and delicately chipped, from Chichen Itza, Yucatan.—Collected by Dr. AUGUSTUS LEPLONGEON, and presented by Mr. STEPHEN SALISBURY, jr.

30578. Indian saddle, made of wood, deer's antler and raw hide, from Smoky Hill River, Wallace Co., Kansas.—Collected by Mr. GEO. R. ALLAMAN, and presented by Mr. SAMUEL GARMAN.

30579—30616. Hammerstone; chipped flints, a scraper, spearpoints and arrowheads also of flint; fragments of shells, pottery and bones from Lovett's farm on Brush Creek, Adams Co., Ohio,—probably the site of a village or a burial place—near the Serpent mound.—Collected by F. W. PUTNAM AND PARTY, and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30617. Chipped flint knife from Lovett's farm, near the Serpent mound, in Adams Co., Ohio.—Collected and presented by Mr. JAMES H. LOVETT.

30618. Carved stone pipe, animal head, from a mound near Bainbridge earthworks on Paint Creek, Ohio.—From the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30619—30625. Stone arrowpoints, flakes and knives from Bainbridge, and Hoptown earthworks in Paint Creek and Scioto valleys respectively.

— Collected by F. W. PUTNAM AND PARTY and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30626 — 30637. Stone celt, arrowheads, and broken ornament of the same material from about the Hopetown works, Ohio.— Collected and presented by Squire J. SMITH.

30638 — 30641. Stone celts and points from the earthworks near Highbank, Scioto Valley, Ohio.— Collected and presented by Mr. MILTON JONES.

30642 — 30650. Flint flakes and unfinished implements from about the earthworks near Highbank, Ohio; flint chips from the works at Milford, Ohio; flake and point from the surface at Sand Ridge and Newtown, Little Miami Valley, Ohio.— Collected by F. W. PUTNAM AND PARTY, and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30651. Small earthen pot with four handles from the ancient cemetery at Madisonville, Ohio.— Collected and presented by Dr. C. L. METZ.

30652. Stone with two pits from Sinking Springs, Brush Creek Valley, Ohio.— Collected and presented by Mr. JAMES D. LOVETT.

30653 — 30671. Flint points and flakes and a broken stone ornament from Bainbridge, Ohio.— Collected and presented by Mr. C. D. LINDLEY.

30672. Carved stone (catlinite), from near Taylor's Falls, Minnesota, found at a depth of two and one-half feet from surface.— Collected and presented by Mr. D. G. SNOW.

30673 — 30675. Flint points and fragments of pottery from burial mounds near the effigy mounds on Remington's farm, Baraboo, Wis.— Collected by Mr. C. C. REMINGTON, and presented by Mrs. REMINGTON.

30676. Quartz knife from Minnesota.— Collected and presented by Miss ELLEN B. USHER.

30677. Fragments of pottery from Picture Cave near West Salem, Wis.— Collected and presented by Mr. E. B. USHER.

30678 — 30689. Fragments of pottery from Onalaska, Wis.; flint chips, a small arrowhead and pieces of pottery from the Sand Hills, La Crosse, Wis.; human bones, fragments of pottery, a stone drill and chips from a group of mounds in the park at La Crosse, Wis.— Collected by F. W. PUTNAM, and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30690 — 30755. Portions of a pot and pieces of pottery, with scrapers, knives and arrowheads of flint; pieces of quartz and broken implements of the same, from a refuse heap on the Watauga river, Carter Co., Tennessee; polished celts of stone; chips and points of quartz and slate; fragments of pottery; piece of mica; a perfect earthen pot; grooved stone axes; human teeth; core and chipped points of obsidian, and a small polished celt of a green stone, from a burial cave on Holston River, near mouth of Beaver Creek, Sullivan Co., Tenn.— Collected by J. W. EMMERT, and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

30756. Cranium and portion of skeleton of Indian child, from Kansas.— Presented by the MUSEUM OF COMPARATIVE ZOOLOGY.

30757 — 30759. Fragments of tile, marble and fresco from Pompeii.— Presented by Mrs. ROMEO ELTON.

30760. Old Spanish olive jar.—Presented by Mrs. W. D. BOARDMAN.

30761 — 30818. Notched sinkers; stone pestles; hammerstones with and without pits; small grooved stones; flint flakes, a scraper of flint and flint points, together with pieces of a steatite pot and numerous fragments of pottery, from the banks of the Susquehanna river between Owego, N. Y. and Athens, Penn.—Collected and presented by Mr. ROBERT HOWELL.

30819 — 30836. Harpoon points of bone; fragments of pottery; chips and broken stone implements; worked bones and bones of beaver, deer and fishes, with pieces of deer antlers, from shellheaps near Damariscotta, Me.—Collected by Mr. FELLOWS KNOWLTON and presented by Mr. JAMES E. KNOWLTON.

30837 — 30954. Bone points of different shapes; handles of antler and worked points of same; chips, scrapers, and points of stone; fragments of pottery; hammer, rubbing and smoothing stones; celts and other stone implements; teeth of deer, beaver and bear, latter perforated; bones of birds, fishes and other animals, from different shellheaps on the main land, and on Fort and other Islands near Damariscotta, Maine; an iron spear-point from the sod above the shells, and rude points from the surface on Fort Island; chips and stone implements, stone celts, fragments of pottery, bone points and worked bones; bears' teeth, different kinds of shells and bones from Hodgdon's Island, Damariscotta River, High Island, John's Bay near Pemaquid, and Hog Island opposite Keene's Point, Bremen, Maine; a stone celt and rude implements from the surface, Bailey's Point, Damariscotta River; also fragments of pottery and clay pipes, made by the whites in early times on Damariscove Island, Maine.—Collected and presented by Mr. A. T. GAMAGE.

30955 — 31107. Grooved stone axes and stone celts; two discoidal stones; hammerstones with and without finger pits; pieces of perforated stones; sharpening stones; fragments of pottery; stone hoes and spear-points and knives, scrapers, drills and arrowheads, a large and varied collection in jasper and argillite from the surface, Trenton, N. J.; and a piece of worked antler, probably a handle to a stone knife, from the gravel in the railroad cut near where the human tooth (No. 27798) was found.—Collected and presented by Dr. C. C. ABBOTT.

31108 — 31125. Grooved stone axe, hammerstone, broken stone-tube with knives, spear points and arrowheads of different sizes and shapes from Trenton, N. J.—Collected and presented by RICHARD M. ABBOTT.

31126 — 31180. Fragments of pottery and of a clay pipe-stem, stone implements such as scrapers, drills, spearpoints and arrowheads of jasper and argillite from Somer's Point, Cape May Co., N. J.—Collected and presented by Dr. C. C. ABBOTT.

31181 — 31195. Grooved stone axe, pestle of the same material; hammerstones, fragments of pottery with spearpoints and arrowheads from Hightstown, Mercer Co., N. J.—Collected and presented by Mr. THOMAS J. PULLEN.

31196. Stone pipe, fig. 314 of Primitive Industry, from Isle of Wight Co., Va.—By PURCHASE.

31197—31301. A collection of grooved stone axes; celts, sinkers and hammerstones; drills, scrapers, knives, spearpoints and arrowheads in jasper and argillite from Jones river, Morgan's Branch, and other places in Kent Co., Delaware; stone celt, piece of steatite jar, stone knives and points, from the banks of the Susquehanna near Danville, Montour Co., Pa.; a notched stone sinker from Millersburg, Pa.; and fragments of pottery from shellheaps on Chincoteague Island, Accomac Co., Virginia.—Collected and presented by Mr. HENRY R. BENNETT.

31302—31303. Grooved stone, and a flat piece of stone, from a mound near Lindsborg, Kansas.—Collected and presented by Mr. J. A. UDDÉN.

31304—31306. Skeletons of three Sioux Indians, from Fort Stevenson, Dakota Ter.—Collected several years ago.

31307—31308. Cranium of Comanche Indian from a grave near Durango, Mexico, collected in 1848; and a piece of obsidian from Obsidian Bluff, Yellowstone Park.—Presented by Dr. A. E. HEIGHWAY.

31309—31315. Pieces of steatite pots, stone celt and points, with fragments of pottery from Granville county, N. Carolina.—Collected and presented by Mr. LEWIS CABOT.

31316—31350. Palæolithic implements of quartz found fifteen feet below the surface in the modified drift at Little Falls, Morrison Co., Minnesota. Included in this collection are the specimens exhibited at the Minneapolis meeting of the A. A. A. S.—Collected and presented by Miss FRANE E. BABBITT.

31351—31353. Quartz arrowpoint and stones of natural forms, believed to have been washed from the gravel at Little Falls, Minnesota, collected by Miss FRANE E. BABBITT; and a quartz scraper from Red Lake, Minn., collected by Rev. FRED SMITH, an Ojibwa Indian, who, however, knew nothing of the use of the implement.—Presented by Miss FRANE E. BABBITT.

31354—31375. A rubbing stone from banks of Neponset river, Milton Lower Mills, Mass., collected by Mr. F. A. BATES; small stone pestle, notched stone and rudely chipped implements of stone from Marshfield, Mass.—Collected and presented by Mr. G. B. FRAZAR.

31376—31378. Rude stone implements from Sand Ridge, Crescent Beach, Revere, Mass.—Collected and presented by Mr. A. I. PHELPS.

31379. Eight flint disks from the lot of 1500 found near Beardstown, Ill., and described in the Smithsonian report for 1876.—Presented by Dr. J. F. SNYDER.

31380—31425. Sea shells of different kinds, bones of deer, birds, fishes; tooth of beaver; fragments of pottery, and chipped stone implements from shellheaps on Hodgdon's Island, Damariscotta River, and on Hog Island, Bremen, Maine; also an iron point from the latter place.—Collected and presented by Mr. ALBERT I. PHELPS.

31426—31536. Fragments of pottery from the surface of a shellmound at Spear's Landing, Lake Monroe, Florida; a rude earthen cup from the outlet of Lake Monroe; stone flakes, chipped stones and rude implements, and scrapers, drills, knives and points of the same material forming the

largest collection of stone implements we have ever received from Florida, all from the shores of Lake Monroe.—Collected and presented by Mr. G. B. FRAZAR.

31537—31900. A large and valuable collection of earthen jars, dishes, bowls and tripods, some plain, others ornamented in relief and in colors, from the ancient burial places in Chiriqui, Panama.—Collected by Mr. J. A. McNIEL and presented by THOMAS G. APPLETON, Esq., and Capt. NATHAN APPLETON.

31901—31903. Stone celts from ancient burial places in the Chiriqui district of Northern Panama.—Collected by Mr. J. A. McNIEL and presented by Capt. NATHAN APPLETON.

31904—31968. Broken stone axe, flakes and chips of obsidian and chalcedony, arrowhead of obsidian and numerous fragments of pottery, plain and painted, from ruined Pueblos and other localities in New Mexico.—Collected by Mr. AD. F. BANDELIER and presented by the ARCHEOLOGICAL INSTITUTE OF AMERICA.

31969—32004. Earthen jars and dishes plain and in the form of animals; bone implement; discoidal stone of quartz; shells and broken shell spoons; fragments of pottery, crania and other human bones from stone graves on Dr. Jarman's farm near Brentwood, Tenn.; broken stone implements and a disk of pottery from the surface near the same place.—Collected by Mr. GEO. WOODS and received from the SUBSCRIBERS OF THE RESEARCH FUND OF 1882-3.

32005—32025. Arrowheads and broken stone points, beads and fragments of pottery, picked up on the bluffs of Little Sioux river in north-western Iowa.—Collected and presented by Prof. WM. O. CROSBY.

32026—32205. Celts, drills, hammers, points, chips and flakes of stone; ornaments of shell, bone and stone; awls and beads of bone, with worked pieces of the same; teeth of bear and beaver, some perforated, others sawed; copper awls in bone handles; scraper made from metatarsal bone of a deer; handles and worked pieces of antler; fragments of pottery; animal bones, burnt and split; carbonized beans; burnt shells with charcoal and ashes; turtle shells; and portions of about seventy human skeletons, from a mound on the farm of Mr. Samuel Edwards in the valley of the Little Miami in Anderson Township, Ohio.—Explorations by Dr. C. L. METZ and F. W. PUTNAM, received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

32206—32504. Human crania and other human bones, a few of which are of pathological interest; animal bones, some burned; teeth of beaver; fragments of steatite pots and of pottery; worked pieces of antler; shell beads and perforated shells; copper celt, bracelet, beads and other ornaments of copper, with rings of the same still encircling the finger bones; copper awl in a handle made of antler; cut pieces of mica; pieces of soft coal; specimens of the earth, burnt and unburnt, gravel, ashes, etc., of which the mounds were composed; tubular pipe of stone; a very varied assortment of stone implements and ornaments, such as axes, celts, pendants, gorgets, mullers, pestles, scrapers, knives, spearpoints and

arrowheads, together with hammer, sharpening and smoothing stones; all from several mounds in the Little Miami Valley. Also burnt human bones, copper earrings, a piece of antler carved to represent some animal, a large sea shell and many shell beads, from a niche in the stone wall surrounding the large altar mound of the Turner group; portions of two human skeletons, surrounded by sixteen human skulls; and a large sheet of mica, from an intrusive burial pit on the side of the same mound.—Explorations of F. W. PUTNAM and Dr. C. L. METZ, and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

32505 — 32555. Bone scraper, beads made of bird-bones, bone awls, and a fishhook made of bone, with teeth and bones of animals; a small cylinder and implements made of antler; shells, some of them perforated; a rude earthen cup about the size of a thimble, and fragments of pottery; smoothing and sharpening stones, together with drills, scrapers, knives, points and flakes of stone, all from the ashpits in the ancient cemetery at Madisonville, Ohio.—Collected and presented by Dr. C. L. METZ.

32556 — 32559. A stone drill and points from the banks of Bush Creek in Newbury Co., S. C.; and shell beads found with a piece of human cranium and teeth on the banks of Broad river in Richland Co., S. C.—Collected and presented by the Rev. JOHN HAWKINS.

32560 — 32590. Portions of a human skeleton and fragments of pottery, collected by F. W. PUTNAM; human crania; fragments of pottery; a brass bullet; stone axe, pestle and gorget, with a number of arrowheads, some of them rude and others unfinished, from an Indian burial place on the banks of the Connecticut river in Longmeadow, Mass.; fragments of steatite vessels, from Enfield, Mass.—Collected by Mr. W. B. LORD.—Received from the SUBSCRIBERS TO THE RESEARCH FUND for 1882-3.

32591 — 32834. A clay image representing a woman, from San Ramon, Nicaragua, presented by Mr. UGARTE; an earthen dish with three feet, from the surface, and a vase, a grinding stone and broken stone axe, also from the surface, presented by Mr. ABARCA; cover of a "Pebetera" from near Potosi, and arrowpoints from Rivas, presented by Mr. D. MALIANO; three small earthen jars, one a tripod, the others ornamented respectively with an animal form and a human face, and a large ornament of jade from a mound at Lamota, Costa Rica, presented by Mr. D. HURTADO; a dish with a hollow base from a shellheap, Culebra bay, presented by Mr. SEIRA; numerous large shoe-shaped burial jars, tripods, vases, cups, jars and dishes of pottery, variously ornamented in colors and with figures in relief; pottery whistles, one in the shape of a bird and one resembling an alligator; metates and grinding stones; portions of human crania and numerous fragments of human and animal bones; glass beads; two gold ornaments; beads and implements of shell; a piece of a gourd; obsidian points; notched sinkers of stone and pottery; sharpening, polishing and rubbing stones; ornaments of jadite; implements of iron; and celts, axes and flakes of stone, with a pendant and broken mortar of same material, from mounds and burying places in Nicaragua and Costa Rica, from different shellheaps in Costa Rica, and from the surface at different places

near Lake Nicaragua. — Collected by Dr. EARL FLINT and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

32835 — 32912. A round stone, a grooved stone axe and a celt, knives and numerous spearpoints and arrowheads of argillite and quartz, from Grafton Co., N. C.—Collected and presented by Mr. LEWIS CABOT.

32913 — 33148. Human skeletons, vessel of pottery and many potsherds; stone celts, arrowpoints and knives, ornaments and disks of stone; pieces of soft coal; ornaments made of shell; two fishhooks made of bone; points and other implements made of bones of deer, birds and antler; cylinders cut from antler; pieces of worked antler, fragments of scrapers made from deer-bones; perforated teeth of animals; bones of various animals; charred corn and charcoal, from an Indian burial place on the Little Miami River, Anderson Township, Ohio.—Explorations of Dr. C. L. METZ and F. W. PUTNAM, received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

33149 — 33150. Two large idols carved in basalt, representing human and animal forms, from Nicaragua.—Collected by Dr. EARL FLINT and received from the SUBSCRIBERS TO THE RESEARCH FUND OF 1882-3.

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REPORT ON THE METEORIC IRON FROM THE ALTAR MOUNDS IN THE LITTLE MIAMI VALLEY, OHIO.

BY LEONARD P. KINNICUTT, D. SC.

IN the spring of 1883 the Curator of the Peabody Museum of American Archæology and Ethnology placed in my hands for examination certain specimens which had been "found on the altar of Mound No. 3 of the Turner Group of earthworks in the Little Miami Valley, Ohio."

These specimens included portions of two ornaments made of iron, several others covered or overlaid with iron, and some separate pieces which were thought to be either an ore of iron or, possibly, metallic iron.

These separate pieces were covered with cinders, small pieces of charcoal, pearls, broken ornaments made of shells and other materials which were firmly attached to the coating of iron oxide, showing that these pieces had been subjected to a comparatively high temperature. On removing this foreign matter it was found that these specimens consisted mainly of metallic iron, which was of a steel gray color and easily malleable. That this iron was obtained by the reduction of an ore of iron seemed at first most probable; still there was a possibility that it might be of meteoric origin and a careful investigation was consequently undertaken.

The first piece taken for this purpose was of an irregular cubical shape, weighing twenty-eight grams and was evidently a detached piece of some larger mass. It was thickly coated with oxide of iron, had in general the appearance of a specimen of limonite and could only with difficulty be cut or broken. The specific gravity was 6.42. A small piece perfectly freed from rust gave on analysis:

Insoluble residue	.	.	.	00.10 per cent
Iron	.	.	.	86.66
Nickel	.	.	.	12.67
Cobalt	.	.	.	00.33
Copper	.	.	.	Trace

A polished surface when etched gave well-marked Widmannstättian figures and at one corner small crystals of olivine and bronzite could be easily identified under the microscope. Traces of a third mineral could also be detected on the polished surface, the exact nature of which I have not as yet been able to determine.

The second specimen examined weighed fifty-two grams, was a square shaped piece and had evidently been hammered into its present form. Crystals of olivine could be easily detected enclosed within the iron. The specific gravity was found to be 6.51.

A piece of the iron thoroughly cleansed from rust gave on analysis:

Insoluble residue	.	.	.	00.12 per cent
Iron	.	.	.	88.37
Nickel	.	.	.	10.90
Cobalt	.	.	.	00.44
Copper	.	.	.	Trace
Phosphorus	.	.	.	Trace

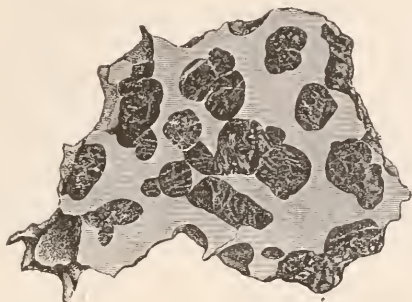
I did not consider it necessary to have a surface of this piece polished as its general characteristics were the same as those of the first specimen examined.

The remaining separate pieces of iron as well as the iron overlying the copper ornaments were now carefully examined and in each and every case the element nickel was shown to be present, and in most of the separate pieces crystals of olivine could be detected. This seems to prove conclusively that all the iron obtained from the mound was of meteoric origin, and in all probability portions of one large meteorite, which belongs, according to Daubrée's classification, to the Syssiderites.

Two months after receiving the specimens above described the Curator of the Museum placed in my hands a mass of iron weighing 767.5 grams which had been found "on the altar in Mound No. 4 of the Turner Group."

This mass consisted principally of metallic iron and olivine; the crystals of olivine have a diameter of 5 to 10 millimeters, and are enclosed within the iron. The specific gravity was found by Prof. Lattimore of Rochester, N. Y., to be 4.72.

A section of the stone was made and polished and the general appearance is shown by the following wood-cut. The dark portions showing the size and shape of the crystals of olivine, which were



of a dark green, weighing from 200 – 800 milligrammes and had a specific gravity of 3.33. An analysis of the olivine gave the following results.

SiO ₂	.	.	.	.	40.02	per cent
FeO	.	.	.	.	14.06	" "
MnO	.	.	.	.	0.10	" "
MgO	.	.	.	.	45.60	" "

The iron which enclosed these crystals had a specific gravity of 7.894 and gave by J. Lawrence Smith's process of analyses :

Insoluble residue	.	.	.	.	00.09
Iron	.	.	.	.	89.00
Nickel	.	.	.	.	10.65
Cobalt	.	.	.	.	00.45
Copper	.	.	.	.	} Traces
Phosphorus	.	.	.	.

A polished surface under the microscope showed, beside the crystals of olivine, small crystals of bronzite, which substance could also be easily detected by reflected light. Small quantities of schreibersite were also undoubtedly present as shown by the traces of phosphorus found in the analysis of the iron.

The specimen belongs to the class of meteorites known as palasites and a section of it resembles more closely a section of the

Atakama stone than any other known pallasite. This resemblance was so marked that it seemed desirable to compare my results with the results obtained by the study of the Atakama pallasite.

Turner mound.			Atakama.		
Sp. gr. 4.72			—————		
Olivine			Olivine ¹		
Sp. gr. 3.336			3.33		
SiO ₂	40.02	per cent.	36.92	per cent.	
FeO	14.06	“ “	17.21	“ “	Fe ₂ O ₃
MnO	00.10	“ “	1.89	“ “	Mn ₂ O ₃
MgO	45.60	“ “	43.90	“ “	
Nickeliferous iron			Nickeliferous iron ²		
Sp. gr. 7.894			7.44 – 7.66		
Insoluble residue	00.09	per cent.	—————		
Fe	89.00		88.01 per cent.		
Ni	10.65		10.25		
Co	00.45		00.70		
Cu	Trace		—————		
Ph	Trace		00.33		
Na	————		00.21		
K	————		00.15		

The above comparisons seem to show, notwithstanding the outward resemblance, that the specimens from the mounds must be considered, for the present at least, as portions of a meteorite of which no other fragments are known.

¹ Schmid. Pogg. Anal., vol. 84, p. 501.

² Buchner. “Die Meteoriten,” Giessen, 1859, page 195.

EIGHTEENTH AND NINETEENTH ANNUAL REPORTS

OF THE TRUSTEES

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OF

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HARVARD COLLEGE, 1886.

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PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY
IN CONNECTION WITH
HARVARD UNIVERSITY.

FOUNDED BY GEORGE PEABODY, OCTOBER 8, 1866.

TRUSTEES.

- ROBERT C. WINTHROP, Boston, 1866. *Chairman.*
CHARLES FRANCIS ADAMS, Quincy, 1866; *resigned*, 1881.
FRANCIS PEABODY, Salem, 1866; *deceased*, 1867.
STEPHEN SALISBURY, Worcester, 1866; *deceased*, 1884. *Treasurer*, 1866-81.
ASA GRAY, Cambridge, 1866. *Pro tempore Curator of the Museum*, 1874.
JEFFRIES WYMAN, Cambridge, 1866; *deceased*, 1874. *Curator of the Museum*, 1866-1874.
GEORGE PEABODY RUSSELL, Salem, 1866; *resigned*, 1876. *Secretary*, 1866-73.
HENRY WHEATLAND, Salem, 1867. Successor to Francis Peabody, as President of the Essex Institute. *Secretary*, 1873.
THOMAS T. BOUVÉ, Boston, 1874-1880. Successor to Jeffries Wyman, as President of the Boston Society of Natural History.
THEODORE LYMAN, Brookline, 1876. Successor to George Peabody Russell, by election. *Treasurer*, 1881-1882.
SAMUEL H. SCUDDER, Cambridge, 1880. Successor to Thomas T. Bouvé, as President of the Boston Society of Natural History.
JOHN C. PHILLIPS, Boston, 1881; *deceased*, 1885. Successor to Charles Francis Adams, by election. *Treasurer*, 1882-1885.
GEORGE F. HOAR, Worcester, 1884. Successor to Stephen Salisbury, as President of the American Antiquarian Society.
FRANCIS C. LOWELL, Boston, 1885. Successor to John C. Phillips, by election. *Treasurer*, 1885.

OFFICERS OF THE MUSEUM AND SPECIAL ASSISTANTS.

- FREDERICK WARD PUTNAM, *Curator*, 1875.
LUCIEN CARR, *Assistant*, 1875; *Assistant Curator*, 1877.
CHARLES C. ABBOTT, Trenton, N. J., *Assistant in the Field*, 1875.
MISS JENNIE SMITH, *Assistant in the Museum*, 1878.
EDWARD E. CHICK, *Assistant in charge of the Building*, 1878.
EARL FLINT, Rivas, Nicaragua, *Assistant in the Field*, 1879.
CHARLES L. METZ, Madisonville, Ohio, *Assistant in the Field*, 1880.
MISS ALICE C. FLETCHER, *Special Assistant*, 1882.
MISS C. A. STUDLEY, *Assistant in the Museum*, 1882.
JOHN CONE KIMBALL, *Student-assistant*, 1883.
W. B. NICKERSON, *Student-assistant*, 1885.

EIGHTEENTH AND NINETEENTH ANNUAL REPORTS.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

THE Trustees of the Peabody Museum of American Archaeology and Ethnology herewith respectfully communicate to the President and Fellows of Harvard College, as their Eighteenth and Nineteenth Annual Reports, the Reports of their Curator and Treasurer presented at the Annual Meetings, June 12, 1885, and April 9, 1886.

ROBERT C. WINTHROP,
ASA GRAY,
HENRY WHEATLAND,
THEODORE LYMAN,
SAMUEL H. SCUDDER,
GEORGE F. HOAR,
FRANCIS C. LOWELL.

CAMBRIDGE, MASS.,
July 31, 1886.

ABSTRACT FROM THE RECORDS.

FRIDAY, JUNE 20, 1884. In accordance with the vote passed at the annual meeting in February, "That a meeting of visitation to the Museum and also for the transaction of business be held at such time during the present season as the President may appoint," the Trustees, at the request of the President, assembled in the Curator's room, Museum building, Cambridge, at 11 A.M.—Present, Messrs. WINTHROP, SALISBURY, GRAY, WHEATLAND, SCUDDER and PHILLIPS. Mr. LYMAN was necessarily absent, engaged in his congressional duties at Washington.

After an inspection of the several rooms in the building and an examination of the various collections under the guidance of the Curator, Mr. F. W. PURNAM, the Hon. ROBERT C. WINTHROP called the meeting to order and in a highly complimentary manner expressed to the Curator the satisfaction of the Trustees with the general appearance of the Museum and with the various methods adopted in the classification and arrangement of the collections. Others of the Trustees concurred in the opinion expressed by the chairman, and on *motion* of the Hon. STEPHEN SALISBURY it was *voted* that the Secretary be requested to place upon record a notice of the visit of the Trustees to the Museum this day, and that the collections were found in a satisfactory condition in all the departments, and arranged in a manner well adapted for study and reference, and that an air of neatness pervaded every part of the building.

Gratification was expressed at the care and thoroughness with which the Curator had performed his duties, and of the great progress thus far made in the accomplishment of the plans of the Founder, specified in the Instrument of Trust.

Mr. SCUDDER asked if any action was to be taken in relation to the explorations under the direction of the Curator. Mr. PURNAM then gave a sketch of the explorations he was conducting in Ohio, with the assistance of Dr. C. L. MERZ, exhibiting specimens, photographs and diagrams to illustrate that of the Turner Group of mounds in the valley of the Little Miami.

On *motion* of Prof. ASA GRAY, the Curator was requested to prepare a full account of the Ohio Group for publication by the Museum, and also to present a paper on the same subject at the coming meeting of the American Association for the Advancement of Science, so that these important explorations may be more widely known. The Curator called attention to the desirableness of having placed at his disposal the sum of one thousand dollars to continue this work. Mr. PHILLIPS, the Treasurer, said that no funds were in the treasury applicable to this purpose, but he considered that the importance of this work would warrant the propriety of an appeal to the friends of science for aid in this direction. It was *voted* to

request subscriptions in aid of the Curator in the continuance of his exploration.

A letter was read from President ELIOT in reply to one sent by Mr. WINTHROP, requesting a conference to define more clearly the respective duties of the Trustees and the Corporation of Harvard College in the management of this Trust, and the prospective appointment of a professor of archæology and ethnology. Referred to the committee of the Trustees appointed at a previous meeting, on this subject.

The Board then adjourned.

FRIDAY, JUNE 12, 1885. The annual meeting of the Board of Trustees was held at the Museum Building, Cambridge, this day at 11 A. M. Present: MESSRS. WINTHROP, GRAY, WHEATLAND, LYMAN, SCUDDER, HOAR and the CURATOR.

Records of the preceding meeting were read and approved.

The chairman, Mr. WINTHROP, said, Our annual meeting has been postponed from month to month owing to the deaths of two of our little number, and the absence of others from home. A quorum could hardly have been obtained until now.

We miss from our meeting to-day, almost for the first time, our venerable associate, the Hon. Stephen Salisbury, one of the original Trustees appointed by Mr. Peabody by his "Letter of Gift," dated Oct. 8, 1866. Mr. Salisbury had been one of our most devoted members. He was our Treasurer for twelve years from our first organization, and though he, then, in 1878, resigned that office, he kindly consented to act as Treasurer and to take charge of our funds, and even to be the subject of reelection for several years more. He was with us at our visitation of the Museum last June, and evinced a warm interest in the progress and prosperity of this Institution. He died at his home in Worcester, on the 24th of August following, at the advanced age of eighty-six years, respected by all who knew him. The place of Mr. Salisbury as a Trustee has been filled by the Hon. George F. Hoar, his successor as President of the American Antiquarian Society, in accordance with the terms of Mr. Peabody's "Letter of Gift." Meantime Mr. Salisbury's place as Treasurer which had been temporarily supplied by Col. Lyman, was filled permanently, it was hoped, in 1882, by Mr. John C. Phillips, who had been elected a Trustee on the resignation of the Hon. Charles Francis Adams. To the deep sorrow of us all, Mr. Phillips died on the 1st of March last, at the early age of forty-six. He had become one of the most active and valuable members of our Board, and his loss to us and to our whole community is greatly lamented. The place of Mr. Phillips both as Trustee and as Treasurer will be the subject of election to-day.

Before proceeding, however, to that or any other business, the Trustees, I am sure, will desire to enter on their records some expression of sorrow at the loss, and of respect for the memory, of these valued associates, and I venture to offer the following resolutions.

Resolved, That the death of our venerable associate, the Hon. Stephen Salisbury, has taken from us one who will ever be held in grateful re-

membrance as the faithful and devoted Treasurer of this Institution from its first organization, until within three years of his death, and as one of the original Trustees, and that we desire to enter upon our records the deep sense which we entertain of his virtues and accomplishments, his liberality and public spirit, and of the sterling qualities of mind and heart which characterized his long and useful life.

Resolved, That the loss of our late associate, Mr. John C. Phillips, is deeply lamented by us all; that his services as Trustee and Treasurer for three years past had been of a character to inspire us with the warmest personal regard, and with a confident expectation of his remaining one of the leading managers of our trust long after many, if not all of us, had passed away, and that it is with sincere sorrow at his early death that we pay this heartfelt tribute to his memory.

The resolutions were unanimously adopted, and the Secretary was requested to transmit copies of the above to the families of the late Messrs. Salisbury and Phillips, respectively.

The chairman, Mr. WINTHROP, read a communication supplementary to the statement made at the last annual meeting in regard to the relations which this institution holds to the university.

Voted that this communication be referred to the same committee (Messrs. GRAY and LYMAN) to whom the statement of similar import was referred at the preceding annual meeting, and that Senator HOAR be added to this committee.

Voted to proceed to choice of a Trustee and Treasurer in place of Mr. Phillips, deceased.

Mr. EDWARD W. HOOPER¹ was unanimously elected Trustee and Treasurer.

The report of the late Treasurer was read and accepted, and ordered to be printed as a part of the Eighteenth report of the Trustees.

The Curator's cash account audited by the Secretary was read, accepted, and ordered to be printed.


The report of the Curator was presented, accepted, and ordered to be printed.

The Board then adjourned.

HENRY WHEATLAND,

Secretary.


¹ Mr. Hooper declining to serve, Mr. Francis C. Lowell was elected at a special meeting held on Monday, June 22, 1885, the record of which will be given in the next report.



The following resolutions, offered by the Hon. Robert C. Winthrop, Chairman of the Board of Trustees of the Peabody Museum, were unanimously adopted at the meeting of the Board on Friday, June 12, 1885, and ordered to be placed on record.

RESOLVED, That the death of our venerable associate, the Hon. Stephen Salisbury, has taken from us one who will ever be held in grateful remembrance as the faithful and devoted Treasurer of this Institution from its first organization, until within three years of his death, and as one of the original Trustees, and that we desire to enter upon our records the deep sense which we entertain of his virtues and accomplishments, his liberality and public spirit, and of the sterling qualities of mind and heart which characterized his long and useful life.

RESOLVED, That the loss of our late associate, Mr. John C. Phillips, is deeply lamented by us all; that his services as Trustee and Treasurer for three years past had been of a character to inspire us with the warmest personal regard, and with a confident expectation of his remaining one of the leading managers of our trust long after many, if not all of us, had passed away, and that it is with sincere sorrow at his early death that we pay this heartfelt tribute to his memory.



REPORT OF THE TREASURER.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology, in connection with Harvard University.

The TREASURER respectfully presents the following Annual Report:—

Income Account.

1884.

April 1.	Received	United States 4 per cent Bonds,							
		2 coupons, \$1 each	.	.	.	.	.	.	\$2 00
July 1.	"	Pueblo and Arkansas Valley R. R.							
		45 coupons \$35 each	.	.	.	.	.	.	1,575 00
"	"	United States 4 per cent Bonds,							
		2 coupons, \$1 each	.	.	.	.	.	.	2 00
Aug. 1.	"	Chicago, Burlington and Quincy R. R., 4 per cent							
		Bonds, 62 coupons \$20 each	.	.	.	.	.	.	1,240 00
"	"	Kansas & Missouri R. R.							
		54 coupons \$25 each	.	.	.	.	.	.	1,350 00
Oct. 1.	"	United States 4 per cent Bonds,							
		2 coupons, \$1 each	.	.	.	.	.	.	\$2 00

1885.

Jan'y 1.	"	Pueblo & Arkansas Valley R. R.							
		45 coupons \$35 each	.	.	.	.	.	.	1,575 00
"	"	United States 4 per cent Bonds,							
		2 coupons, \$1 each	.	.	.	.	.	.	2 00
Feb'y 2.	"	Chicago, Burlington & Quincy R. R.,							
		62 coupons \$20 each	.	.	.	.	.	.	1,240 00
"	"	Kansas & Missouri R. R.							
		54 coupons \$25 each	.	.	.	.	.	.	1,350 00
									\$8,333 00

1884.

July 1.	Paid	F. W. Putnam, Curator,							
		Account of Building Fund	.	.	.	.	.	.	\$1,555 00
Aug. 1.	"	F. W. Putnam, Curator,							
		Account of Professors' Fund	.	.	.	.	.	.	1,500 00
"	"	F. W. Putnam, Curator,							
		Account of Museum Fund	.	.	.	.	.	.	1,114 00

1885.

Jan'y 1.	"	F. W. Putnam, Curator,							
		Account of Building Fund	.	.	.	.	.	.	1,555 00
Feb'y 1.	"	F. W. Putnam, Curator,							
		Account of Professors' Fund	.	.	.	.	.	.	1,500 00
"	"	F. W. Putnam, Curator,							
		Account of Museum Fund	.	.	.	.	.	.	1,114 00
									\$8,333 00

JOHN C. PHILLIPS,

Treasurer.

BOSTON, FEBRUARY, 1885.

CASH ACCOUNT OF

Dr.

F. W. PUTNAM, Curator, in Account with Peabody

1884-85.

To Building Fund.

Balance on hand from last account	\$2406 17	
Received from John C. Phillips, Treasurer	3110 00	
		<u>\$5516 17</u>

To Museum Fund.

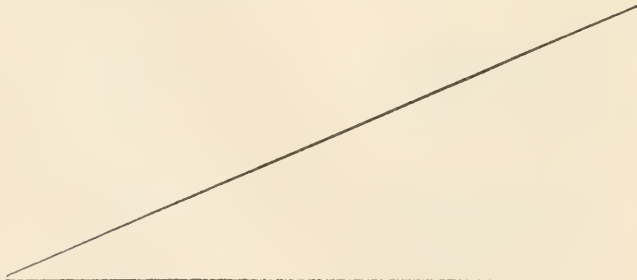
Balance on hand from last account	10 86	
From Building Fund, on account of cases 1868-74	600 00	
Publications sold	28 20	
Received from John C. Phillips, Treasurer	5228 00	
Clerical services of Assistant on salary account	50 75	
		<u>5917 81</u>

To Subscriptions for Archæological Research in America.

Balance on hand from last account	65 55	
Received from Hon. Robert C. Winthrop, Boston, Mass., 2nd subscription	50 00	
Received from H. A. Homes, Esq., Albany, N. Y.	5 00	
“ “ Dr. A. H. Thompson, Topeka, Kan.	5 00	
“ “ A. E. Douglass, Esq., New York, N. Y.	47 00	
Received from Wm. B. Weeden, Esq., of Providence, R. I., 3rd subscription	50 00	
Received from Mrs. Esther Herrmann, New York, N. Y.	50 00	
“ “ John C. Phillips, Esq., Boston, Mass., 2nd sub- scription	200 00	
Received from Prof. Asa Gray, Cambridge, Mass	13 00	
“ “ Miss Marian Hovey, Boston, Mass.	50 00	
		<u>535 50</u>

To Subscriptions for Research among Indian Tribes.

Balance on hand from last account	550 00	
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		<u>550 00</u>
		
		<u>\$12,519 53</u>

Cambridge, Feb. 2, 1885.

THE CURATOR.

Museum of American Archaeology and Ethnology.

Cr.

1884-85.

By Building Fund.

Paid Museum Fund, on account of cases 1868-74	\$600 00	
Cases, stock and labor	1928 89	
Furniture, stock and materials used	32 13	
Repairs on building	22 55	
Express	23 75	
E. E. Chick	500 00	
	<hr/>	\$3107 32
Balance, cash on hand to new account		2408 85
		<hr/>
		5516 17

By Museum Fund.

Collections purchased and special explorations	642 38	
Balance, cost of 16th and 17th Report	214 61	
Drawing and engraving	37 74	
Library: books, subscriptions, cards and various publications	195 57	
Photographing and materials	99 02	
Record Books	28 75	
Stationery	121 57	
Express, postage, telegraph, telephone	413 00	
Extra labor	15 69	
Paper trays	23 25	
Fuel and gas	209 44	
Water tax	20 84	
Incidentals	31 84	
Salaries	3850 00	
	<hr/>	5903 70
Balance, cash on hand to new account		14 11
		<hr/>
		5917 81

By Subscription for Archaeological Research in America.

Explorations in New Jersey	75 00	
Explorations in Virginia and Ohio	132 10	
Explorations in Ohio	283 91	
	<hr/>	491 01
Balance, cash on hand to new account		44 54
		<hr/>
		535 55

By Subscription for Research among Indian Tribes.

Amount to new account	550 00
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\$12,519 53

I have examined this account, with the vouchers, and find it correct.

HENRY WHEATLAND.

March 17, 1885.

SUBSCRIBERS AIDING IN THE WORK OF THE MUSEUM.

1882-3.

HON. STEPHEN SALISBURY, Worcester, Mass.	\$500 00
HON. THEODORE LYMAN, Brookline, Mass.	500 00
JOHN C. PHILLIPS, Esq., Boston, Mass.	500 00
MRS. AUGUSTUS HEMENWAY, Boston, Mass.	500 00
SAMUEL D. WARREN, Esq., " "	500 00
MRS. GARDNER BREWER, " "	300 00
DR. C. A. WARE, " "	200 00
DR. R. M. HODGES, " "	100 00
MRS. G. H. SHAW, " "	100 00
HON. ROBERT C. WINTHROP, " "	100 00
WM. B. WEEDEN, Esq., Providence, R. I.	50 00
COL. A. C. WOODWORTH, Chicopee, Mass.	500 00
MRS. SUSAN C. WARREN, Boston, "	250 00
DR. ROBERT H. LAMBORN, New York, N. Y.	200 00
GEORGE PEABODY RUSSELL, Esq., Isle of Wight,	100 00
MRS. CLARA B. KIMBALL, Boston, Mass.	100 00
WM. B. WEEDEN, Esq., Providence, R. I., 2d subscription,	50 00
JOSHUA W. DAVIS, Esq., Boston, Mass.,	50 00
A FRIEND, Buffalo, N. Y.	33 00
DR. WM. F. WHITNEY, Boston, Mass.	25 00
MRS. GEO. O. SHATTUCK, " "	5 00

Amount of above previously announced, . . \$4,663 00

1884-5.

HON. ROBERT C. WINTHROP, Boston, Mass., 2d sub.,	50 00
H. A. HOMES, Esq., Albany, N. Y.,	5 00
A. H. THOMPSON, M.D., Topeka, Kansas,	5 00
A. E. DOUGLASS, Esq., New York, N. Y.	47 00
WM. B. WEEDEN, Esq., Providence, R. I., 3d sub.,	50 00
MRS. ESTHER HERRMAN, New York, N. Y.,	50 00
JOHN C. PHILLIPS, Esq., Boston, Mass., 2d subscription,	200 00
PROF. ASA GRAY, Cambridge, Mass.	13 00
MISS MARIAN HOVEY, Boston, "	50 00
HON. STEPHEN SALISBURY, Worcester, Mass., 2d sub.	200 00
PROF. E. N. HORSFORD, Cambridge, Mass.	100 00

\$770 00

Total of subscriptions, . . . \$5,433 00

Additional subscriptions are solicited for the purpose of continuing the explorations.

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology:—

GENTLEMEN:—The sad events to which the honored chairman of your board has referred, as causing the postponement of the annual meeting to this late date, lead me to request the privilege of stating our gratitude at being able to welcome him to his accustomed place after his long illness, and to ask to be permitted to add my personal acknowledgment of the kindly manner with which I ever was treated by the two members of the Board of Trustees whose absence is mourned to-day. By the office which they held successively I was brought necessarily into direct communication with them, and I know how much they were interested in the work of the Museum, and in the particular plans for explorations in America which it has been my pleasure to carry out, in large part by their coöperation, as they were the two largest contributors of money for that purpose.

The time covered by the brief report which I now offer, includes the year from February, 1884 to February, 1885. This period was a fruitful one in the number of specimens received at the Museum and in important results obtained from explorations conducted in its name.

The pecuniary aid which a few friends of American research furnished for the continuation of the explorations in Ohio, referred to in several preceding reports, has been the means of bringing to light many facts of the greatest importance in relation to the archæology of the Ohio valley. The systematic explorations we thus far have been able to carry on have given a clew to the sequence of events which have taken place in that region of our country where archæologists have hoped for important results.

In order to continue these explorations, however, we must ask for additional financial support from all who are interested and willing to aid in the work, which necessarily must be slow and ex-

pensive in its accomplishment. We also must ask the coöperation and good will of local societies and the owners of estates in the region of our work. It should be remembered by all interested in the subject, that these efforts are simply for the purpose of making known the facts relating to an important ethnological region, which, if properly worked out, will be of the greatest importance in understanding the complicated questions in regard to ancient American peoples, their connections with one another and with the tribes which occupied the continent at the time it was first known to our own race. These are great problems which can be solved only by long continued and systematic exploration such as we have undertaken in the region in question.

Unfortunately, the desire to possess relics of the past, regardless of their worth in a scientific sense, has led to much indiscriminate digging for "relics;" and many have been found and scattered widely without a record of their discovery or their association with other objects.

While it is of the utmost importance to explore any mound in a thorough manner and to get from it a complete record of its construction, contents and relation to other works,—digging holes in a hundred places and obtaining here and there a few implements or ornaments, which by themselves are simply implements or ornaments and nothing more, is not working for scientific ends and should be discouraged by all scientific societies and by all owners of land upon which earthworks exist. Similar remarks apply, of course, to all ancient remains, be they mounds, burial places, fortifications, or sites of villages. Thorough exploration followed by careful study of the results should be the method of all explorers, and a conscientious record of the whole should be kept to be published eventually in some permanent form accessible to all workers in the science. The various objects obtained during such explorations never should be scattered or separated from the associated articles, nor should they be trusted to the vicissitudes of private collections, without proper protection from fire or provision for their ultimate deposition in a permanent and fire-proof museum.

It is upon this plan and by such a method, that the explorations in Ohio have been carried on by the workers of the Museum. We have chosen for particular and thorough work the valley of the Little Miami and the closely associated archæological region. With the assistance of the enlightened residents of that region

and the hearty coöperation of Dr. C. L. Metz, who, living in the valley, is able to give continuous oversight to the work, while I can be on the ground only at irregular though frequent intervals, it has been possible to execute what has proved already the most important archæological exploration ever made in Ohio, and it is our hope to carry it on to the end. Not only are we exploring all kinds of mounds and earthworks, the old village sites and the burial places, but the banks of rivers, the gullies and the gravel and river deposits as well, in order to correlate all our observations and understand the successive occupations of the region.

The photographs, diagrams and specimens now exhibited to you, in addition to what I have stated, will give you an idea of the extent of the work we have undertaken, and I am sure you will fully realize its importance to American archæology in adding to the Museum the means of making comparative studies which can but furnish instructive results.

It is not my intention at this time to enter into a detailed account of all the explorations and of the materials obtained, as that is being reserved for a special memoir on the archæology of the Little Miami valley, which, in accordance with your expressed wishes, will be offered to you for publication in parts when the explorations of special places have been finished.

As the grounds where we are conducting our work are under cultivation at different times, we have been obliged often to leave a particular spot for a time and work at another until, after the gathering of some crop, we could return to the first. Owing to this necessary method of operations it is not yet possible to give a perfect account of much of our work. This year, however, has brought to completion the three years' work on the large group of mounds and earthworks on Mr. Turner's farm to which reference has been made in previous reports, and in order to preserve the record in its proper sequence, an account of the exploration of one of the outlying mounds of the group is given as a special paper in connection with this report.

My attention having been called to an account in the "Chilli-cothe Leader" of an interesting collection of objects obtained by some school boys from a mound in the Scioto valley which we had formerly visited, I requested Mr. Kimball to go to the place and make inquiries relating to the specimens, as the account seemed to indicate certain important associations with the people who made

the Turner group of mounds then in course of exploration. The result of his visit impressed me with the importance of making a comparative study of the group of mounds, from one of which the specimens had been taken. Through the friendly offices of the editors of the "Leader," who had obtained the right to examine the large mound, Mr. Edwin Harness, the owner of the land, kindly gave his permission for the exploration of the group. Although our exploration of this group has been as thorough as time would permit last autumn, it was not completed, but we hope to finish it at no distant time as it is included in the region we have mapped out as that which we hope to work over in a thorough manner. As in all other Ohio work, I had the hearty assistance of Dr. Metz. We soon discovered that we were exploring the group of earthworks surveyed by Squier and Davis in 1840, and described in their important volume under the heading of "Ancient works in Liberty township." With the aid of their plan the embankments forming the square and great circle still can be easily traced in the cultivated fields on both sides of the narrow gauge railroad track. A portion of the earth walls which formed the square are still fairly preserved in the woods beyond the field. In the next field, to the northwest, the lines of the walls which crossed the pike and connected the square with the small circle, can be seen, and the small circle can be followed in the woods on the west side of the pike, towards Mr. Harness' house. Several of the depressions or excavations noted by Squier and Davis, about and within the works, are still defined, and the little circle to the east of the square, with the long, single embankment running southward, can be made out.

Squier and Davis represent five small mounds inside the great square of twenty-seven acres. These have been levelled by cultivation, but we could trace the outlines of three at least, one of which we thoroughly examined, and found that it had been a simple mound of earth thrown up inside one of the "gateways" of the square. Three mounds, one twice the size of the others, are represented on the plan as just outside one of the "gateways" on the eastern side of the great circle of forty acres area. All three have been much reduced in height by ploughing over them, but probably only the superficial portions have been disturbed. These three mounds we examined with care, and found that the small one to the westward contained only a small bed of ashes.

The other two proved to be burial mounds of considerable interest. The human bones were much decayed. We found in these mounds various objects made of copper, stone, shell and mica, of the same character as those found in the large mound of the group, consisting of copper plates, spool-shaped ear-ornaments made of copper, a few small ornaments of copper, one small copper celt, a crescent-shaped ornament cut out of slate, another small stone ornament, a few large beads covered with copper, and a smaller one covered with silver over the copper, shell beads and numerous other small objects.

Another mound in the cornfield, north of the three above mentioned, was also dug over completely. In this we found a large bed of ashes and charcoal about at the level of the natural surface upon which the mound was made. This ash bed covered nearly the whole area occupied by the mound, and in it we found many fragments of pottery and cut pieces of mica, some of which were circular. A large piece of grass matting and a mass of burnt seeds, nuts and acorns, were found in the bed of ashes. In one place the charred matting was in several layers making a thickness of an inch or more. Near the centre of the mound, extending to the south, was a long, narrow pit, about 9×2 feet, which was a foot in depth. At the bottom of this pit were burned stones, and over them ashes and charcoal, fragments of pottery and a few burnt bones.

Thus it will be seen that the several mounds connected with the extensive earthwork were erected for different purposes and vary considerably in their structure.

Near the eastern corner of the part of the earthwork which we have called the "great square," and within the line of the circular embankment forming the "great circle," stands the largest mound of the group, which is known as the "Edwin Harness mound." This mound proved to be of great interest and unlike any other we have explored. It is 160 feet long, from 80 to 90 feet wide, and from 13 to 18 feet high along the central portion, which rises gradually from the southern to the northern part. Up to this time we have made a thorough exploration of about one-quarter of the mound, and have ascertained that it is a burial mound of a remarkable character. In the northern portion, forty feet from the centre, we discovered the first of the burial chambers, of which we found a dozen in all. These chambers were made by placing logs, from 5 to 6 inches in diameter, on the clay which forms the lowest

layer of the mound, in such a way as to make enclosures 6 to 7 feet in length and from 2 to 3 in width and about a foot in height. In these the bodies were placed, evidently wrapped in garments, as indicated by the charred cloth and mats found in several of the chambers. With the bodies were buried various objects, such as copper plates, earrings, shell beads, and in one instance, long knives chipped from flint. In two instances the skeletons were found extended at full length within the chambers, the outlines of which could be traced by the imprint of the logs in the clay, the logs themselves having decayed, leaving only a dark dust. On the breast of one of the skeletons was a thin copper plate or ornament. The chemical action of the copper had preserved the texture of a piece of finely woven cloth lying between the plate and the bones of the chest. In the other chambers the bodies had been burnt on the spot, as conclusively shown by the relative positions of the bones and the fact that in two instances portions of the body had fallen outside the fire and escaped burning. It became evident as our exploration progressed that these chambers were covered by little mounds of gravel and clay, and that in those where the burning had taken place the coverings of earth were placed in position before the bodies were consumed, shown by the small amount of ashes and the reduction of the logs to charcoal in their position on the clay floor of the chamber, which was burnt to a thickness varying with the amount of heat. It is probable that the burials and cremations did not all occur at the same time, and that, after all these little mounds had been made, earth was brought from various surrounding places and heaped over all. Then the mound was finished with a covering of gravel and a low border of loose stones was placed around its base.

It is of interest to note that Squier and Davis, in 1840, dug two pits in this mound. At the bottom of their pit A, which was just south of the centre of the mound, they opened one of the burial chambers, and they state that the skeleton in it was partly burnt, that it was enclosed in a framework of logs, and that with it were a copper plate and a pipe carved out of stone. They remark that the body seemed to have been enveloped in matting. Their pit B was about twenty feet northwest of the centre and there they came to another burnt skeleton, as shown by our exploration, although, deceived by the imperfect examination which the caving of the pit compelled them to make, they thought they had found an

“altar” and mention the burnt burial chamber as such. They state that they found at this point several implements made of bone. At the side of their excavation we took out about half a dozen pointed implements made from the leg bones of deer. Several months before our work was begun, as already referred to, the school boys, under the lead of Mr. Wilson, dug two pits in the mound, one of which was between those made by Squier and Davis over forty years ago, and the other at the side of Squier and Davis’ pit B. In each of these many remarkable objects were found. So far as “relics” are concerned, the boys made a lucky hit and took out more objects from one of their pits than were found in all our exploration. The larger part of these we have been able to secure from the boys, and from Mr. Daniel R. Harness, who very kindly gave to the Peabody Museum all that he had purchased from the boys at the time, realizing that they would be of more importance and value to science if placed in the Museum with the other objects from the mound, than if held in private hands as mere curiosities. Among the specimens thus obtained were two copper celts and three or four copper plates, also several copper ear-ornaments, some of which were covered with meteoric iron in the same way as those from the Turner mounds in the Little Miami valley, and a celt made of meteoric iron. Thus we have an important link connecting the people who built this great mound and the earthworks about it in the Scioto valley, with the builders of the singular group on the Turner farm in the Little Miami valley.

In connection with Dr. Metz’ part in these explorations in Ohio, I have great pleasure in stating that he has identified his archaeological interests entirely with those of the Museum and has made over to it the extensive private collection which he had formed during the past ten years. This collection was made in large part during the early period of the explorations of the singular burial place and ashpits in the Ferris woods, referred to in previous reports as the “Ancient cemetery near Madisonville”. We have been able thus to secure many additional and interesting specimens from that place. There are also numerous objects obtained from the surface at places which our later explorations have proved to be ancient village sites. Hundreds of other specimens in the collection were obtained in various portions of the Little Miami valley, but principally in the vicinity of Madisonville and

Newtown. The whole collection is covered by sixteen hundred entries in the catalogue and comprises over forty-four hundred specimens, many of which are unique.

Thus Dr. Metz, like Dr. Abbott, has become thoroughly identified with the work of the Museum, and both have placed their important collections in a place of safety, and where, we may trust with them, they will do the most good for all time to come in the study which both have done so much to advance in their respective fields.

Dr. Abbott has continued to examine the Trenton gravel as opportunities occurred, and during the recent removal of a large amount of the gravel by the Pennsylvania Railroad company he was able to secure several interesting palæolithic implements from various depths in the gravel. The most interesting specimen, however, is a portion of a human under jaw which he found at the depth of sixteen feet from the surface, not far from where a piece of a tusk of a mastodon (or mammoth?) was found several years ago. It will be remembered that Dr. Abbott had found a human tooth in this gravel, and had sent us several years ago a very thick and in several respects singular human cranium which was found in the gravel deposit, although at a considerable distance from the jaw and tooth. These several discoveries of portions of the bony framework of man are of great interest as corroborative testimony of his existence at the time of, and possibly preceding, the formation of the gravel deposits at Trenton, a fact which was proved by the previous discovery of his implements in these deposits. To Dr. Abbott alone belongs the credit of having worked out the problem of the antiquity of man on the Atlantic coast, for to whatever geological age these gravels may be assigned ultimately, in them unquestionably we find buried the relics of the representatives of the earliest men on the Atlantic coast.

In a former report brief mention was made of the explorations of shellheaps on the coast of Maine, and of the interesting results which were obtained. In that work Mr. Albert I. Phelps was employed as an assistant and a plan was discussed with him for a more extended exploration along the coast from the Damariscotta to the Penobscot river. As other duties prevented me from conducting the proposed explorations in person I arranged with Mr. Phelps to take charge of the field work, which he did with thoroughness and obtained most satisfactory results. During the year Mr. Phelps made extensive excavations in the great Damariscotta

shellheap, which is twenty feet high, and secured samples of the material from its top to its base, and at various distances from the edge nearest the river. During these excavations fragments of pottery were found in the ashes of old fireplaces at the bottom of the heap. As these potsherds, probably, are as old as any pottery in New England, it is of interest to note that this ancient pottery is well made, and that the incised ornaments upon the pieces, although simple, are pleasing to the eye.

It would extend this report greatly to give a detailed account of the forty-six shellheaps examined by Mr. Phelps, with descriptions of the many interesting objects obtained from them and recorded in the catalogue under 687 entries. I can mention only the finding of several hundred bone points, a few of which are of particular interest from their close resemblance to harpoons and arrowpoints from the northwestern coast. There are also a number of stone implements, among which are chipped points of a rude character and several rude celts. Fragments of pottery with ornamental designs were found more or less abundant in most of the heaps, and, as in our first exploration, several articles of European manufacture were found near the surface of some of the heaps. The method followed in the exploration of the shellheaps, that of making sections, is such that the exact depth at which each object is found can be noted.

In every case a sample was taken at the top, middle and bottom of the heap, so as to show the actual condition of the material forming it, and in order to study the fauna of the time the heaps were being formed, large collections were made of the different shells and of the bones of fishes, reptiles, birds and mammals.

In connection with the study of the shellheaps of Maine we have again to thank Mr. James E. Knowlton for interesting specimens received from the shellheaps and old village sites along the shores of the Damariscotta river. Among the specimens which he has sent are some stone flakes which were found under such conditions as indicate considerable antiquity. Their decomposed surfaces give the flakes the appearance of great age and it is probable that they are the earliest traces of man yet found in the Damariscotta valley.

When we have case room for the proper arrangement of the large amount of material obtained from the shellheaps of the Atlantic coast, it will form a most instructive exhibition illustrative of primitive life and art.

It is with pleasure that I can refer again to the important researches of Miss Fletcher among the Omahas, with whom she has become identified so thoroughly, both by her philanthropic and scientific work. Becoming convinced that the future welfare of her Indian friends depended largely on their being firmly located in their homes and accepting the conditions of civilization, she made a visit to Washington for the purpose of pressing the passage of a law granting patents to the Omahas for their land in severalty. This was secured at last, largely by her persistent appeals, which were endorsed by senators and others in high position, and, acting under the authority of the Secretary of the Interior, she had the satisfaction of returning to the Omahas to carry out the provisions of the bill and to assist her Indian friends in establishing their homes. This work she completed in July, 1884, but, unfortunately, at a terrible sacrifice in a protracted illness, causing her the loss of health from which she has not yet recovered. During this time her interest in the life and customs of the tribe never flagged and she continued to make observations and notes. The immediate results of these were given in part at the meeting of the American Association for the Advancement of Science in Philadelphia in August last, and an important paper by her is published in the Proceedings of that meeting under the title of "Land in severalty to Indians, illustrated by experiences with the Omaha tribe." Two other papers were read by her under the following titles: "Observations upon the usage, symbolism and influence of the Sacred Pipes of Fellowship among the Omahas," and "Omaha child-life." These are not printed in full in the Proceedings as they were abstracts from the series of papers on Omaha life and customs which she has prepared in connection with her ethnological work for the Museum during the past four years. It is hoped that these important papers will be printed in the next report.

When Miss Fletcher left the Omahas in July, she brought as a sacred trust to be confided to the keeping of the Museum, a collection of singular interest and inestimable ethnological value, as it never can be duplicated. This is nothing less than the collection of objects which for generations have been held sacred among the Omahas, the contents of "The Sacred Tent of War." One must enter fully into the inmost recesses of Indian thought and customs in order to appreciate the great importance of the trust the Museum has in its perpetual keeping. It will be understood

better by reading the following letter with the incorporated pathetic speech of the venerable Omaha, who thus gave up all the most sacred belongings of the tribe at a time when his people were to start on the new pathway, which we hope will bring them fairly and fully to the benefits of civilization as well as to its responsibilities. I will add only that the objects mentioned in the letter have been cared for properly and placed in a case where they will be safe from injury, to be exhibited as the offering of the Omahas in proof of their earnestness in adopting their new life.

OMAHA RESERVATION, June 6, 1884.

DEAR MR. PUTNAM:

It is with peculiar pleasure that I commit for preservation, to the Peabody Museum of American Archaeology and Ethnology the entire belongings of the Sacred Tent of War of the Omaha tribe. The articles are yielded to you by the descendants of the hereditary head chief of the tribe, to whose custody belong the ancient relics, and the presentation is made in behalf of the family by Mr. Francis LaFlesche and myself.

The sacred tent of war and its contents were the charge of the Wae-jin-ste gens, in which for several generations the office of principal head chief has been hereditary, and this official was initiated into the mysteries of the rituals connected with the articles contained in the tent. To the oldest man in the gens, however, was confided the immediate care of the articles. These were always with the tribe, being carried with peculiar rites on the annual hunt, and sometimes they were taken into battle. These articles are as follows:—

The two ceremonial war pipes (37551-2).¹ Two tobacco pouches made of elk bladders (37554), and two of very young elk skins (37555). A round pipe stem (37553). The staff (37556) upon which the old man in charge of the tent leaned when calling the warriors to the ceremonies of the tent. Pouch (37557) containing the sacred shell. Fourteen human scalps (37558), trophies of battle. The avenging staff (37559). The sacred pack (37560); the strap with which it was carried (37562); the staff (37561) upon which it was hung. The mystery of this pack was known only to the chiefs. The honor pack (37563) used in the ceremonial when honors were conferred upon warriors. Rope (37564) made of sinew.

The sacred tent of war was vital to the autonomy of the tribe. Without it war and chieftainship were impossible. It gave rank to the tribe among other tribes and caused the Omahas to be feared as enemies and consulted as friends. The present act of the keepers of the sacred articles is without a parallel. The putting away of these ancient signs and symbols of authority, without any iconoclasm, but with the sober appreciation that a

¹The numbers given in parentheses are those under which the articles are recorded in the Museum catalogue.

new era is upon the people, wherein they have no part or place, marks the Omaha tribe as possessed of men having extraordinary degree of mind and character.

To our own race these relics may appear strange, trivial, or forbidding; they are certainly objects unidealized to our thought, but they have a significance which tells of courage and self devotion. These noble traits lie at the base of the act that has gently laid these articles among the historical remains of the Indian race; a race of the past, whose only future lies in the possibilities of American citizenship.

To-day as Ma-hin-thin-gae came to put his sacred charge out of his keeping and into that of the Museum, I could not but wish that his brave and unique act might find its worthy place in history. In a low voice he said "These sacred articles have been in my family for many generations, no one knows how long. My sons have chosen a different path from that trodden by their fathers. I had thought to have these things buried with me, but if you will care for them, and place them where they may be looked upon by my children when they wish to think of the past and the way their fathers walked, you may do so. Should there come a time when I care to look once more on that which has been with my fathers, I would like to be permitted to do so. I know that the members of my family are willing I should commit these articles to your care, no other persons have a right to question my action, though there are men who will say hard things of me because of this act."

It was late in the afternoon when we reached Ma-hin-thin-gae's lodge; the sun had set. The old man was sitting alone outside his dwelling in the fading light taking a last look at the ancient belongings of his gens. On our arrival he led the way to where he had gathered them for delivery and lifting them into the wagon said with quiet haste "They are all there", and turned away. We too turned and left as the round moon suddenly rose over the valley.

Yours truly,

ALICE C. FLETCHER.

To Mr. John Cone Kimball, who has been for several years my companion in field work and a volunteer assistant in the Museum, we are indebted for the thorough exploration of three mounds on the bluffs of the Mississippi, in Atlas township, Illinois. This work was carried on at his own expense with the kind assistance of Mr. Alfred Stebbins and Mr. C. B. Dustin of Summer Hill and Capt. Adams of Atlas. Two proved to be burial mounds of simple construction. The earth of which they were made is not adapted for the preservation of human remains, and fragments only of the bones of several skeletons were found in each mound. Although the earth forming the mounds was carefully removed, section after section, the only things found, in addition to the fragments of human bones, were potsherds which were obtained

here and there in the earth, but not associated with the human remains. If any articles were buried with the dead they must have been of a perishable nature. Further south in the state, and even as near as the bluffs along the Illinois river, mounds of a different character have been observed, and it seems probable that these explored by Mr. Kimball are burial mounds of tribes who have lived in this region within the past few centuries. The third mound was of a different character, and possibly the site of a dwelling.

During Mr. Kimball's visit to Pike county, Illinois, he was able to secure from several friends and by his own efforts a fair representation of the stone implements found on the surface of cultivated fields or during excavations of various kinds, both on the bluffs and on the bottom land. Among these are a celt of hematite, a few stone axes and celts, five agricultural implements chipped from flint, found together, and many chipped points made from the white flint of the region and similar to those from Missouri.

To another assistant, Miss Studley, we are indebted for three Indian skeletons, from Marion, Massachusetts. A clay pipe and other European articles found with these skeletons prove that they were of Indians who were buried after contact with the whites. In the collection of about two thousand crania in the Museum there are but forty-nine from New England, and every addition from this region is important for comparative study. It is hoped that all our friends will bear this in mind and when they hear of the discovery of an Indian's skeleton that they will secure it, if possible, for the Museum, with all associated objects; be they copper or brass kettles, metallic arrowheads, glass beads, clay pipes, iron nails and other things obtained from the white man, or stone implements and other articles of native work. It is principally from the association of such objects with the bones that an approximate estimate can be made of the time of burial.

To Mr. H. R. Bennett we are indebted for another important addition to the collection of stone implements from Delaware.

From Mr. G. B. Frazar we have received several more lots of rude implements and stone flakes from the valley of the Charles river, particularly from the vicinity of Watertown. These specimens are of particular importance for a study of the stone age of our immediate vicinity. In this connection mention should be made of an old refuse pile, or shellheap, now nearly destroyed, in the Cambridge cemetery, for the knowledge of which I am indebted to Dr. S. W. Driver, who awakened the interest of the foreman, Mr. Childs, so

that he saves for the Museum all specimens which are found. We have received already from him a few stone implements and a number of oyster shells found at this place. This is, I believe, further up the Charles river than any *oyster* shellheap found before.

In the last report, where mention is made of important material received during several preceding years from Dr. Flint in Nicaragua, attention was called to the discovery of human footprints in the tufa, under several layers of volcanic material, on the shores of Lake Managua. The four blocks of tufa containing the footprints were received at the Museum during the early part of this year, as mentioned in a footnote added to the last report, and they are now on exhibition with the Flint collection, which occupies about half of the first northern gallery. At the meeting of the American Antiquarian Society, April 30, 1884, I presented a brief notice of these footprints and gave Dr. Flint's statement of the geological conditions under which they were found. As no further information of importance has been received in relation to those conditions, which alone will furnish a correct determination of the age of the bed of lava containing the imprints, I need refer only to the Proceedings of the American Antiquarian Society, Vol. III, part 2, and to an article by Dr. Flint, printed in the American Antiquarian for March, 1884.

It has been long known that a considerable number of ornaments made of jadeite are found in the burial mounds of Costa Rica and Nicaragua, particularly in the former republic. The last invoice received from Dr. Flint contained several fine jadeite ornaments, one of which Prof. Cooke has been so kind as to compare with a cup of jadeite in his possession, which came from Pekin, and he has pronounced the two specimens alike in color, hardness and specific gravity. This of course implies, in the absence of any other known locality of this particular variety of the stone, that the American specimens came from the known localities in Asia. One of the Costa Rica specimens is a celt elaborately carved and bearing a characteristic Central American figure, and several other specimens are halves or quarters of celts which have been made into ornaments and perforated at one edge for suspension. These facts suggest that these specimens of jadeite were brought to America from Asia in ancient times in the form of celts, similar to the jade celts found in the ancient pile-dwellings of the Swiss lakes. It seems probable that, after a time, owing particularly to the custom of burying such things with the dead, the original

stock was greatly reduced and the value of the remainder proportionately increased, which led to cutting up existing celts and making the pieces into ornaments. The fact that two of the ornaments obtained by Dr. Flint are pieces of one celt, as he noticed when he found them, is conclusive evidence of this cutting, although several other pieces, as he also observed, have portions of the rounded or sharpened edge of the original celt remaining. It seems to me that such facts as these are worthy of consideration in connection with others pointing to an Asiatic origin of some of the Central American peoples, or at least to a very remote interchange between the two countries.

From Mr. G. H. Squier, a gentleman much interested in the archæology of Wisconsin, we have received a box of human bones found in two mounds near Trempealeau, of which an account is given in the following letter. It is to be regretted that the examination of the mounds was only partial, owing to his having followed the old and unsatisfactory method of digging a hole in the centre, instead of removing the whole mound, section by section.

TREMPEALEAU, WIS., July 22, 1884.

DEAR SIR:

After a somewhat longer delay than I anticipated, I have the material of which I wrote ready to send and will do so at once. Before describing the mounds which I have opened, some description of the general external characteristics of the mounds in this vicinity may not be without value.

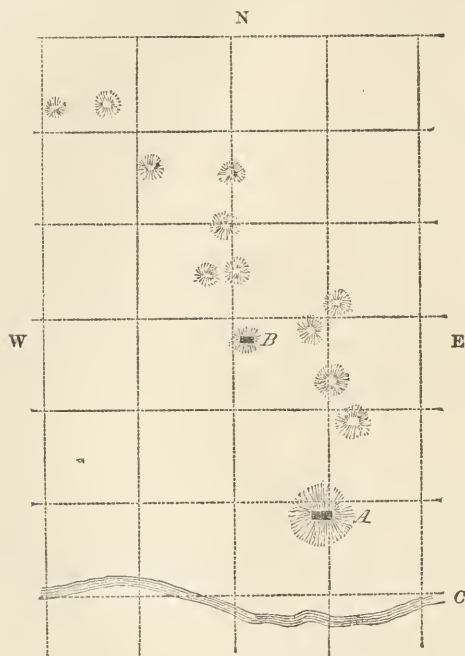
Owing to the natural beauty of the place and some peculiar advantages, Trempealeau appears to have been always a favored locality with the Indians, and on the authority of the late Hon. Geo. Gale, there are within the limits of the township of Trempealeau between one and two thousand mounds, or more than in all the rest of the county or in any other adjoining county. Quite a number occur within the limits of the village. Our own house (built before we came to the place) is standing on a mound.

There is little evidence of intentional grouping of the mounds, beauty and convenience of situation alone appearing to have determined their location. The group of thirteen shown in the sketch is perhaps the most compact in the county, but, as will be seen, no definite plan seems to have governed the arrangement. At Dresbach, Minnesota, they are arranged in strictly straight parallel lines.

There appears to be some basis for separating the mounds of this vicinity into two types. Whether it will be found to possess any value in classification it is too early to say. In one, the base is round and the size moderate, varying from one to five or six feet high and from ten to thirty feet in diameter. In the other, the base is a short ellipse and the size much greater, ranging from five to fifteen feet high and from forty to eighty feet in longest diameter.

All three of the mounds from which I have taken human remains were of the first or round type. Of the other type, I have opened two, but obtained nothing

My last excavations were made in the group shown in the sketch. I first opened mound *B* from the top by a hole six feet by two. I found



Group of mounds at Trempealeau, Wis. *A* and *B*, mounds opened. *C*, slough of the Mississippi. The river is about a quarter of a mile south of the slough.

nothing in it but a small fragment of bone near the natural level of the ground, about three feet from the top. Next opening mound *A* in the same manner I found portions of the skeletons of two individuals. About three feet from the top I began to find reddened earth and at four feet charcoal, where there had been an oak log. It would seem as if the log must have been covered with earth while still smouldering. The bones were to the eastward of the charcoal and several inches lower . . . The bones were broken and scattered about in such a manner that it seems to me that neither secondary nor intrusive burial can be admitted in this case, for the following reasons:

First: The remains occupy the natural surface of the ground over a considerable area.

Second: The area covered by the bones, and by the charcoal which extends still more widely, is so great that the uncovering of it would have necessitated almost the demolition of the mound.

Third: The bones could not have been placed there after the fire without disturbing the charcoal layers and there is no evidence of such disturbance.

Fourth: The bones, though in disorder, do not show the kind of disorder I should expect from reinterment.

The mound opened two years ago was upon a hilltop and alone; it was about three feet high. On the natural surface was a bed of ashes and burnt earth (of which I failed to take a specimen), over which the bones were widely scattered in the same manner as in the mound already described. Their relation to the ashes was also such that they must have been in their places before the mound was made.

I am indebted to Mr. Tyler of our village for assistance in opening the last mounds and I hope to have his help in further work.

Hoping that the little I have been able to do will be of some value,

I remain,

Yours very truly,

G. H. SQUIER.

In the course of the special explorations for the Museum, a considerable number of human bones have been obtained which are of pathological interest. The first of these were collected and described by my predecessor, Professor Wyman. Some time since, Dr. Clarence J. Blake, in examining the crania in the Museum, found much of interest bearing upon his special study of diseases of the ear, and has published an account of his observations.¹ Several other gentlemen have visited the Museum from time to time for special study of our osteological collection, and Dr. Wm. F. Whitney, the Curator of the Museum of the Harvard Medical School, has examined the collection and prepared a series of notes upon all the bones, including the crania, which exhibit anomalies, injuries and disease. These notes will be printed in connection with this report, and while they will prove of interest to pathologists and students of human anatomy, they will be of considerable importance to ethnologists.

Mr. Carr, Miss Smith, Miss Studley and Mr. Chick have continued, as heretofore, faithful workers in their respective departments, and to their ready coöperation I am indebted for much that has been accomplished during the year in the various departments of office and museum work.

As in former years, the books and pamphlets received for the Museum library have been sent to the College library for cataloging, and the titles of the more important are given in full in

¹ American Journal of Otology, April, 1880.

the quarterly Bulletin of the University. Analytical work on the library has been performed by Miss Smith in such time as she could give to it, and catalogue cards gradually are being provided with references to special papers in various publications. The list of donors to the library is appended to this report.

More entries were made in the Museum catalogue during the past than in any other year, and by far the largest number of specimens received in a single year were catalogued and cared for. The total number of entries in the catalogue was 4,450, which include more than 25,000 specimens. Of course time and care have been required in unpacking this large amount of material, assorting it for cataloguing, making a special entry of each lot, painting the number on each specimen, then in checking off each specimen by the catalogue in order to avoid errors of numbering, and in mending broken specimens. After these matters were attended to came the final arrangement of the different lots, either in cases or in trays in the cupboards.

In addition to the specimens enumerated there have been received over 7,000 bones of animals from the explorations of the shellheaps of the coast of Maine, and more than 8,000 from the mounds of the Little Miami valley. These are of importance in the study of the vertebrate fauna of the two places during the times they were occupied by the respective peoples in whose refuse piles the bones were found. Similar collections have been made in former years from other places, and as each lot is assorted and the bones are identified, many points are observed of both ethnological and zoölogical interest.

Now is the time when all such material must be collected if at all. Every year the farmer's plough destroys alike the sacred altars, the refuse piles and the graves of those who occupied the land before him, and a constantly narrowing field is left for the archæologist. The time is coming soon when only a stone axe, or some other almost indestructible implement, will be found by chance where now are undisturbed village sites and burial places. Realizing this we only can be thankful that during the past year so many things have been secured from destruction and placed where they will be for all time available to students of American Archæology.

Respectfully submitted,

F. W. PUTNAM,
Curator.

June 12, 1885.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1884.

ADDITIONS TO THE MUSEUM.

33151—33152. Carved human heads of stone from Ozualama, Vera Cruz, Mexico.—Presented by Mr. E. H. WHORF.

33153. Native club from the Tonga Islands.—Presented by Mr. SAMUEL TUFTS.

33154—33156.—Shell and glass beads and a brass bracelet, found with the skeleton of a Sioux child, from Fort Stevenson, Dakota.—Collected by Drs. GRAY and MATTHEWS.

33157—33161. Knives and arrowheads of stone from New Braintree, Mass.—Collected and presented by Mr. F. O. WARNER.

33162. Chipped stone implement (?) from bank of Charles river, Watertown, Mass.—Collected and presented by Mr. GEO. B. FRAZAR.

33163—33269. Palæolithic implements; grooved stone axes and hammer-stones, pestles and notched sinkers of stone, rubbing and smoothing stones, stone pendant with incised lines, fragment of a stone tube, numerous potsherds, and the usual varied assortment of implements of jasper and argillite including knives, scrapers, points and arrowheads, from Trenton, N. J.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

33270. Chipped stone implement from Trenton, N. J.—Collected and presented by Mr. RICHARD M. ABBOTT.

33271. Cube made of an astragalus of a deer, from a mound in Arkansas.—Collected by Capt. W. P. HALL and presented by Mr. S. H. SCUDDER.

33272—33293. Three grooved stone axes, piece of mica, with scrapers, knives, points and other implements of stone, from Trenton, N. J.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

33294. Stone point from Trenton, N. J.—Collected and presented by Mr. RICHARD M. ABBOTT.

33295—33303. Stone points and a chipped flake of argillite, from Trenton, N. J.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

33304—33325. Stone beads from a mound on the bank of Lake Nicaragua and a jade pendant from a mound in Costa Rica; earthen jar of animal shape, clay image of a man and human head in pottery from islands in the lake; human crania from Rivas, Nicaragua; four human footprints in tufa found at depths of from fourteen to fifteen feet under several beds of lava near Lake Managua, Nicaragua, and fossil plants and leaves from the beds of clay and lava overlying the footprints.—Collected by Dr. EARL FLINT and received from the Subscribers to the Research Fund of 1882—3.

33326. Chipped stone celt from John's Island, Florida.—Collected and presented by Mr. JOSEPH WILCOX.

33327. Portion of a human jaw, found in the gravel sixteen feet below the surface in a railroad cut at Trenton, N. J.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

33328. Pebbles taken from the gravel at the spot where no. 33327 was found.—Collected and presented by Mr. F. W. PUTNAM.

33329—33369. Drills, scrapers, knives, arrowheads and points of jasper, quartz and argillite from the surface; and rude implements from the talus in railroad cut at Trenton, N. J.—Exploration conducted for the Museum by Dr. C. C. ABBOTT.

33370—33372. Three crania with under jaws more or less complete, and other human bones, from shellheaps of Laguna, province of Santa Catharina, Brazil.—Collected and presented by Dr. J. CAPRISTRANIO DE ABREN.

33374—33375. Carved models of the sacred bull and of the lingam, such as are used in the Hindu temples, from Benares.—Collected and presented by Mr. ALEXANDER AGASSIZ.

33376—33377. Grooved stone axe and a steatite pipe from Granville county, N. C.—Collected and presented by Mr. LEWIS CABOT.

33378—33387. Grooved stone axe, flint points, stone celts, a stone hoe and some stones in natural forms, from the surface near Liberty works, Jefferson township, Ross co., Ohio.—Collected and presented by Mr. D. M. LUNBECK.

33388—33389. Portion of a copper plate and a small fragment of cloth from the large mound in the Liberty works on land of Edwin Harness Liberty township, Ross co., Ohio.—The former collected by Mr. ORN NEFF and presented by Mr. J. V. HARNESS, the latter collected and presented by Mr. ROBERT HARNESS.

33390—33397. Portions of jade celts, with a human head and an ornament in terra cotta, from burial mounds at Liberia, Costa Rica.—Collected by Dr. EARL FLINT and received from the Subscribers to the Research Fund of 1882-3.

33398. Stone implements—two of more than sixty found three and a half feet deep in peat on south side of Christiana river, Wilmington, Del.—Collected and presented by Mr. GEO. G. LOBDELL.

33399. Stone points from Meredith Village, N. H.—Presented by Rev. G. F. BARD.

33400. Stone celt, found in digging a cellar in Bow street, Cambridge.—Presented by Prof. N. S. SHALER.

33401—33425. Drills, semilunar knives, points, flakes and worked chips, all of flint, found near Gabes, Tunis.—Collected by Capitaine le VICOMTE DE NADAILLAC of the French army, and presented by M. le MARQUIS DE NADAILLAC.

33426. Sacred axe from the South Sea islands.—Presented by Mr. FREDERICK H. RINDGE.

33427. Obsidian knives from Guatemala.—Presented by Mr. GEORGE F. KUNZ.

33428. Flint point from Plattsburg, N. Y.—Collected and presented by Mr. ROBERT D. KELLOGG.

33429. Silver ornaments from the grave of a Crow Indian near Topeka, Kansas.—Collected and presented by Dr. A. H. THOMPSON.

33430. Chinese charms from Yokohama.—Presented by Dr. S. KNEELAND.

33431—33444. Four crania and skeletons of Indians, with a clay pipe of European manufacture, from Marion, Mass.; burnt stones and shells of different kinds on Indian hill, Wing's Cove, Marion, Mass.; shells of several species from a shellheap and a worked bone from a shellheap under an old stone wall in Marion, and shells from the woods at Wing's Cove.—Exploration of Miss C. A. STUDLEY conducted for the Museum.

33445—33446. Human bones and red ochre from a burial mound on the bluff at Stockland, Pleasant Hill township, Pike co., Ill.—Collected and presented by Mr. ALFRED STEBBINS.

33447—33448. Human bones and broken flint implements from a burial mound on the bluff, Atlas tp., Pike co., Ill.—Collected and presented by Mr. JOHN CONE KIMBALL and party.

33449. Hematite implement from the surface near the Adams mound.—Collected and presented by Mr. JOHN CONE KIMBALL and party.

33450. Grooved stone axe from the surface of the Adams mound in Atlas township, Pike co., Ill.—Collected by Mr. JAMES GRAHAM and presented by Capt. J. G. ADAMS.

33451—33472. Fragments of human bones and pottery, unio shells, animal bones, flint chips, burnt stones, and pieces of antler from a mound on the land of Capt. J. G. Adams; portions of human skeletons, potsherds and samples of clay, loam and burnt earth, from mounds on land of Mr. Kanada Long; piece of a stone axe from the surface, all on the bluff in Atlas township, Pike co., Ill.—Exploration conducted for the Museum by Mr. JOHN CONE KIMBALL, and presented by him.

33473. Flint point from a ravine near the mounds in Atlas township, Pike co., Ill.—Collected and presented by Mr. ALFRED STEBBINS.

33474—33480. Flint point and a stone axe from Lee county, Ill.; stone celts, flint points and arrowheads from Atlas and Martinsburg townships, Pike co., Ill.—Collected and presented by Mr. CHARLES J. WALKER.

33481—33484. Broken stone axe and flint points from Martinsburg township, Pike co., Ill.—Collected and presented by Mr. ADAM SNYDER.

33485. A catlinite pipe found while digging a grave on the bluff in Atlas township, Pike co., Ill.—Collected by Mr. NOAH WARD and presented by Mr. ADAM SNYDER.

33486—33509. Flint knives, points and arrowheads collected by Mr. LUCIEN E. OAKLEY; stone hoes and picks collected by Mr. WILLIAM OAKLEY, all from Pleasant Hill township, Pike co., Ill.—Presented by Mr. JOHN CONE KIMBALL.

33510—33511. Stone celt and a flint point from Atlas township, Pike

co., Ill.—Collected by Miss **ABBIE STEBBINS** and Mr. **JOHN WILLIAMS** and presented by Miss **ABBIE STEBBINS**.

33512—33520. Flint knives, arrowheads and points from Atlas township, Pike co., Ill.—Collected and presented by Mr. **WILLIAM A. DUSTIN**.

33521. Hematite celt from Spring Creek township, Pike co., Ill.—Collected by Mr. **JAMES GRAHAM** and presented by Capt. **J. G. ADAMS**.

33522—33525. Flint points from Martinsburg township, Pike co., Ill.—Collected and presented by Mr. **JASPER FOSTER**.

33526—33537. Flint knives and points and a hematite celt with grooves from Martinsburg township, Pike co., Ill.—Collected and presented by Mrs. **MARY E. TOOTHACHER**.

33538—33539. Stone celt and a flint point from Atlas township, Pike co., Ill.—Collected by Mr. **HENRY SIMPSON** and presented by Mr. **FRANK W. SIMPSON**.

33540—33553. Two grooved stone axes, hammerstone, flint points and broken stone implements from Martinsburg township, Pike co., Ill.—Collected and presented by Messrs. **G. HERBERT** and **FRANK GRABIEL**.

33554—33555. Skull of a Navajo Indian and fragments of another found near Fort Defiance, Arizona.—Collected and presented by Dr. **SAMPSON**.

33557—33559. Two baskets, one for seed and the other for water, made by the Hualapai Indians; and an earthen bowl from the pueblo of San Ildefonso.—Collected and presented by Rev. **FREDERICK GARDINER, jr.**

33560—33571. A Chinese cap, Chinese newspapers, an ornament for a child, head ornaments worn by the women and girls, and sundry articles of food used in China.—Given by the widow of the late Professor **Ko** to the Rev. **F. W. HOLLAND**, and by him presented to the Museum.

33572—33573. Counting machine from China and a toy boomerang made in London.—Presented by Dr. **S. KNEELAND**.

33574. Case of Chinese gambling sticks.—Presented by Prof. **C. E. MUNROE**.

33575. Native sash of grass cloth from Africa.—Presented by Mr. **GEO. B. FRAZAR**.

33576. Whizzer from the pueblo of Zuñi.—Collected and presented by Mr. **F. H. CUSHING**.

33577—33633. Shells of different kinds, animal bones, fragments of pottery, chipped stone implements, and flakes, arrowheads and hammers of stone, bone points, broken implements and pieces of cut and worked bone, all collected by Mr. **F. G. KNOWLTON** from shellheaps on the Damariscotta river; portion of a human skeleton collected by Mr. **WARREN MOUSE** from a shellheap at Davis' Point, Cushing, Maine, and chipped stone implements and a stone pestle, with one bone point and fragments of others, collected by Mr. **F. G. KNOWLTON** from the same shellheap; portion of a large earthen vessel, potsherds, chipped stones, and pieces of antler collected by Mr. **F. G. KNOWLTON**, from shellheaps on Carver's

Island, off Friendship, Maine; pieces of lead and iron, with fragments of clay pipes and earthen ware of European manufacture from an ancient settlement on Damariscove Island, and a broken stone implement and chips and flakes of stone from the surface near by, collected by Mr. W. J. KNOWLTON.—Presented by Mr. JAMES E. KNOWLTON.

33634—33643. Portions of human skeletons, shell of unio, fragments of pottery, pieces of bones, flint chips, charcoal and burnt earth from mounds at Trempealeau, Wis.—Collected and presented by Mr. G. H. SQUIER.

33644—33660. Fragments of pottery, bones of animals, plumbago, hammerstone and chipped stones from a shell heap at Sag Harbor, N. Y.; chipped pebbles and points, hammerstone, rude stone points, chipped implement and a pitted stone from the surface, Sag Harbor, N. Y.; a long hammerstone from Bridge-Hampton, N. Y.—Collected and presented by Mr. WM. A. WHITE.

33661—33709. Stone axe, and knives of the same material, with arrowheads and spearpoints of different sizes and shapes, from Jones' river, and Morgan's Branch, Kent co., Delaware.—Collected and presented by Mr. HENRY R. BENNETT.

33710. Joints of crinoids (beads?) from west bank of the Susquehanna near Selings Grove, Penn.—Collected by Mr. GEO. C. WAGENSELLES and presented by Mr. HENRY R. BENNETT.

33711—33713. Three heads in terra-cotta from the bank of an ancient reservoir on the Tampico Division of the Mexican Central Railway.—Collected and presented by Mr. E. H. WHORF.

33714. Cranium found near Lamoine, Hancock co., Maine.—Presented by Mr. JOHN E. CLARK.

33715—33725. Stone points from the surface of Lehigh Island, at Allentown, Penn.—Collected and presented by Mr. A. F. BERLIN.

33726. Fragments of human skeleton from a cave near Glasgow Junction, Ky.—Presented by Mr. LUCIEN CARR.

33727. Idol of pottery made by the Mexicans in imitation of an antique.—Collected and presented by Dr. F. F. HILDER.

33728. Stone implement (probably from the Pacific islands) found in East Freetown, Mass.—Presented by Mr. GALEN A. PEIRCE.

33729—33731. Stone implement from southwestern Dakota; a stone point and an iron arrowhead from Smoky Hill river, Kansas.—Collected, and presented by Mr. SAMUEL GARMAN.

33732—33733. Stone point and a brass button from an Indian burial place, Agawam, Mass.—Collected and presented by Mr. B. W. LORD.

33734. Grooved stone sinker (?) from Lanesville, Mass.—Collected and presented by Mr. R. S. TARR.

33735—33740. Rude stone implements and stone points from East Wareham, Mass.—Collected and presented by Miss C. A. STUDLEY.

33741—33746. Stone points from Franklin county, Ohio; fragment of pottery from a shellheap in Florida; and a stone arrowhead from gravel brought to South City wharf, Boston.—Collected and presented by Mr. H. W. DALE.

33747—33761. Rude stone implements, stone scraper, chipped drills

and points, and a fragment of a clay pipe, from Beverly Cove, Mass.—Collected and presented by Mr. A. K. OBER.

33762—33900. Rubbing, hammer and pitted stones; grooved stone axes and clubs; broken stone gorget and perforated stone; celt, pestles and notched stone sinkers; fragments of pottery, clay pipes and pipe stems, with a large assortment of knives, drills, scrapers, points, and arrowheads of jasper and argillite of the usual New Jersey surface patterns, from Trenton, N. J. In this collection there is a palæolithic implement which was found twelve feet from the surface in the tertiary deposit of marine sand in the bluff on which stands Dr. Abbot's house. This bluff was dry land at the time the Trenton gravel was deposited.—Collected and presented by Dr. C. C. ABBOTT.

33901—34086. Stone hammers and club, cores, points and chipped implements of stone, fragments of stone pestles, pottery and a soapstone vessel, from different places in Watertown, Mass.; rude implements, chips, flakes, scrapers and points of stone; hammers and rubbing stone, the latter notched; piece of a stone pestle and fragments of a steatite pot from Arlington, Mass.; stone chips, flakes, knives and points, with broken stone implements from Belmont, Mass.; hammerstone, points and flakes of stone from Revere Beach; stone chips, arrowpoints and broken implements from Waltham and Lake Cochituate; stone chips, flakes and points from Kingston, Wayland, and Concord, Mass.; fragments of pottery from Wayland.—Collected and presented by Mr. GEO. B. FRAZAR.

34087—34100. Flakes and chips of quartz and eleven palæolithic implements of the same material, found fifteen feet below the surface in the modified drift at Little Falls, Morrison co., Minnesota.—Collected and presented by Miss F. E. BABBITT.

34101—34260. A large and interesting collection of pots and jars of different sizes and shapes, in human, animal, bird and vegetable forms, some painted, some plain, and others ornamented with incised lines and geometrical figures, from ancient graves on the Piura river, 120 miles N. N. W. of Lambayeque, Peru.—By purchase.

34261. Earthen jar with animal head, from Peru.—Collected and presented by Dr. GEO. J. ENGELMANN.

34262—34273. Grooved stone and quartz points from Riverdale, N. Y.; argillite points from Shinnecock, Long Island; iron tomahawk and quartz point from Greenwich, Conn.; stone axe and a pointed stone celt, with handles of earthen dishes from San Domingo, W. I.—Collected and presented by Mr. H. PRIME.

34274—34279. Wooden spoons and trays, with rope made of maguey fibre and different kinds of bark, all from Mexico.—Presented by Mr. JOUN CONE KIMBALL.

34280—34284. Dried fruit of cactus used as food, stone pestle, and a stone mortar with top of basket work, and a sample of the acorn meal and of the acorns from which it was made, all from the mission Indians of South Pasadena, Cal.—Collected and presented by Mr. H. N. RUSS.

34285—34302. Five human crania, three earthen jars, varying in shape and ornamentation, shell beads, pieces of coal cut and polished, bone im-

plements, shell of unio, shell spoon and fragment of a chipped stone knife from stone graves on Mr. Oscar Noel's farm near Nashville, Tenn., and circular stones and pieces of flint from the surface near by.—Collected by Mr. GEO. WOODS in continuation of the exploration by Mr. F. W. PUTNAM.

34303—34328. A broken stone pipe and stone implements of various kinds including axes, celts, mullers, points and flakes from Newtown, Hamilton co., Ohio; a circular flint core found three feet below the surface in Anderson township, Hamilton co., Ohio.—Collected and presented by Mr. WILLIAM DURHAM.

34329. Cast of a stone ornament from a mound in Brown county, Ohio.—Presented by Mr. C. F. LOW.

34330—34336. Stone chips and broken points from the vicinity of the Natural Bridge, Va., and flint chips from Marietta, Ohio, collected by Messrs. F. W. PUTNAM and J. C. KIMBALL; boat-shaped stone from Gomer, Ohio; and large chipped stone points from the Muskingum valley near Marietta, Ohio.—Exploration of the CURATOR conducted for the Museum.

34337—34350. A rude axe, celts, chipped points and a broken gorget, all of stone, with flint flakes and fragments of pottery, from a cultivated field about the Turner group of mounds in the Little Miami valley, Ohio.—Collected and presented by Messrs. E. J. and J. M. TURNER and received during the exploration of Mr. F. W. PUTNAM and Dr. C. L. METZ.

34351—34357. Stone implements consisting of a muller, celts, long points and a small axe from a ploughed field near the Turner mounds in the Little Miami valley, Ohio.—Exploration of Mr. F. W. PUTNAM and Dr. C. L. METZ, conducted for the Museum.

34358—34855. This collection, covered by five hundred entries in the catalogue, consists of a part of the articles found in the mounds of the Turner group in the Little Miami valley, Ohio. (Other specimens from this group of mounds have been recorded in previous reports.) In it are human crania and other human bones; thousands of animal bones; many pearl, bone, copper, shell and clay beads; implements of bone including needles, arrowpoints and chisels; a disk and cut pieces of mica; copper plates and earrings, some of the latter covered with meteoric iron; copper celts, a cone and a nugget of copper; sea shells, some carved and perforated, also shells of *Unio* and *Helix*; handles made from antler—one with a stone point, another with a bone point still in place—also points and cut and worked pieces of the same material; red ochre; formations of iron and lime from the pits and flues; bears' teeth—some perforated, others with pearls inserted in them—also perforated teeth of other animals; celts, drills, scrapers, points, arrowheads, chips, cores, flakes and flake knives, all of stone, with polishing and pitted stones and hammerstones; fragment of a gorget and other carved and worked stones; fragments of pottery, some plain, some cord and cloth marked, and others ornamented with stamped and incised figures; burnt earth and bones; charcoal and pieces of soft coal cut in various shapes; and specimens of the earth, sand, clay and concrete layers of which the mounds were composed.—Explora-

tion of Mr. F. W. PUTNAM and Dr. C. L. METZ, conducted for the Museum.

34856—35134. Burnt human, animal and bird bones; shells of different kinds, some of them perforated; cores and chipped points of flint; ornaments made of stone; hammerstone and a discoidal stone; beads of pearl, bone and shell; canine teeth of large bears, some of them perforated; teeth of deer and a shark's tooth; ornaments made of copper; ear ornaments of copper, a few covered with a thin layer of silver and others with meteoric iron; small hemispheres of stone and of pottery, covered with silver, copper and meteoric iron; fragments of silver ornaments; a celt of meteoric iron and one of copper; ornaments and fragments of mica; portion of a pipe carved out of stone; a large mass of galena; cloth, seeds, nuts, corn and grass, all charred; fragments of matting partly burnt; ball of clay; fragments of pottery; bone handles, awl points and other implements of bone; braided grass; charcoal, ashes and burnt clay some of the latter still bearing the impress of logs of wood; portions of burnt and unburnt human skeletons; all from mounds belonging to the Liberty group on the land of Edwin Harness, esq., in Liberty township, Ross co., Ohio.—Explorations conducted for the Museum by Mr. F. W. PUTNAM and Dr. C. L. METZ.

35135—35154. Charcoal, ashes and cut pieces of soft coal, animal bones burnt and unburnt, a bone awl, fossil coral, a fossil elephant's tooth, broken stones, split pebbles, flint flakes and chipped points from the Durham mound, Newtown, Little Miami valley, Ohio.—Explorations conducted for the Museum by Dr. C. L. METZ and Mr. F. W. PUTNAM.

35155—35161. Split and burnt animal bones, jaws and teeth of deer and bear, cut turkey bone, fragment of bone implement and skull of a deer with two perforations in it from the stone mound in the Edwards group, Little Miami valley, Ohio.—Explorations conducted for the Museum by Dr. C. L. METZ and Mr. F. W. PUTNAM.

35162. Bone point from the mound on the river bank near the Turner group, Little Miami valley, Ohio.—Exploration conducted for the Museum by Dr. C. L. METZ and Mr. F. W. PUTNAM.

35163—35185. Unio shells, potsherds, a pottery disk, a hammerstone, and bones of birds, deer and turtle, from a refuse pile on the hillside at the Sand Ridge, with a stone celt, pitted stones, large sharpening stone and chipped stone implements of different kinds including knives and points from the Sand Ridge, Anderson township, Little Miami valley, Ohio.—Explorations conducted for the Museum by Mr. F. W. PUTNAM and Dr. C. L. METZ.

35186—36783. This magnificent collection is covered by 1600 numbers in the catalogue and consists of more than four thousand specimens. Among many other things, it contains over 200 celts, 36 grooved axes, 28 pipes, and 51 articles of copper. In part it consists of cut pieces of soft coal; disks of shell and pottery; beads of shell and copper; flakes, knives, points, drills and scrapers of flint; a fossil tooth; cylinders of antler; shells of turtle and busycon; twenty earthen pots and numerous

fragments ornamented in different styles; pins, pendants and other ornaments of shell; pipes of stone and pottery; sharpening, rubbing and pitted stones, with mullers, celts, club heads, grooved axes, hammers, tablets and implements of the same material, some of them carved; finger rings, ornaments and hammered pieces of copper; five human crania, one of them with an arrowhead imbedded in the occiput, together with other human bones from the ancient cemetery in Ferris woods near Madisonville, Ohio. Pieces of iron, a perforated copper hammer and a piece of a mastodon's tooth, found in the leaf mould over the burials in the Ferris woods. Flint flakes, knives, points and scrapers; copper beads and pieces of hammered copper; soft coal; beads and whistles made of bird bones; shells of unio, some of them perforated; one shell containing red ochre; bones and teeth of deer, bear, wolf, rabbit, squirrel, beaver, raccoon, woodchuck and of birds, turtles and fishes; numerous cylinders, points, handles and agricultural implements of antler; burnt clay and bits of bone also burned; fish hooks, points, scrapers and implements of bone some of them perforated; ornaments made from teeth of animals; sharpening and rubbing stones, with celts, grooved club heads and pipes made of stone; toy vessels of pottery and fragments of large jars; charred corn, nuts, seeds, rope and grass matting all from the ashpits in the ancient cemetery near Madisonville, Ohio. Hammerstones and incised stones; earthen vessels and fragments of pottery, charcoal, shells of unio, some of them perforated; a stone celt; flint flakes, and points of various shapes and sizes from different mounds in the Little Miami valley, Ohio, and in Mississippi county, Missouri and in Arkansas. Besides these specimens there are numbers of flint flakes, drills, points and scrapers of the usual Ohio patterns; gorgets, pipes, club heads, hammers, celts, pestles, mullers, hoes and grooved axes of stone; fragments of pottery and disks of pottery and stone; shells and shell ornaments of different kinds; sharpening and rubbing stones, with other stone implements, including several of plummet shape; bone fish-hooks and points; handles, cylinders and points of antler; pieces of cut coal, principally from Indian graves and village sites in Ohio; also a number of similar specimens from Indiana, New York and Missouri.—Collected and presented by Dr. C. L. METZ.

36784—36800. Grooved axe, mullers and fragments of a gorget, all of stone, and various chipped flint implements such as scraper, drill, points and flakes from the surface, Little Miami valley, Newtown, Ohio.—Collected and presented by Mr. WILLIAM DURHAM.

36801—36817. Pitted hammerstone and grooved stone axe from the Durham farm, hammerstone and burnt earth from the Broadwell mound near Newtown, Ohio; chipped flint points and scrapers from the surface, Anderson township, Little Miami valley, Ohio; stone muller from Newtown, Ohio.—Collected by Mr. MATTHIAS BRITEN, Dr. C. L. METZ and Mr. F. W. PUTNAM and received during the exploration conducted for the Museum by Mr. F. W. PUTNAM and Dr. C. L. METZ.

36818. Stone celt from Red Bank, Little Miami valley, Ohio.—Collected and presented by Mr. WILLIAM DURHAM.

36819. Chipped flint knife found within the Liberty works, Scioto valley, Ohio.—Collected and presented by Mr. JAMES V. HARNESS.

36820. Stone celt from the farm of J. D. Mace, Scioto valley, Ohio.—Collected and presented by Mr. J. D. MACE.

36821. Stone muller found twelve miles north of Chillicothe, Ohio.—Collected and presented by Mr. J. H. ROADS.

36822—36825. Chipped flint flakes and points from the surface near the Liberty works, Scioto valley, Ohio.—Exploration of Mr. F. W. PUTNAM and Dr. C. L. METZ, conducted for the Museum.

36826. Chipped flint points from Amsterdam, N. Y.—Collected and presented by Mr. P. M. VAN ERPS.

36827. Stone implement from Concord, N. H.

36828—36829. Bone implement and cut bones from a shellheap on Damariscotta river, Maine.—Collected and presented by Mr. CHARLES METCALF.

36830—36834. Assegais from Madagascar; an Arab shield made of rhinoceros hide, from Zanzibar; knife, sheath and belt, with a club, an axe, assegais, bows and iron pointed arrows from different places in eastern Africa.—Collected and presented by Capt. A. WARD WEAVER, U. S. Navy.

36835—36838. Models of a native boat and of a gourd boat bailer, necklaces made of seeds, from Surinam, Dutch Guiana.—Collected and presented by Mr. FERNANDO NEUMANN.

36839—37546. Oyster, clam, mussel, quahang, Pecten, Natica and Buccinum shells; human bones; numerous fragments of pottery; teeth and bones of animals; pieces of worked antler; stone implements consisting of arrowheads, scrapers, celts, gouges and hammers, with flakes and chips of stone; polishing and sharpening stones; implements of bone some of them perforated, and among them over 500 bone points many of which are barbed; all from the shellheaps along the coast and on the islands of Penobscot bay and Damariscotta river, Maine.—Collected by Mr. A. I. PHELPS in continuation of an exploration conducted for the Museum by Mr. F. W. PUTNAM.

37547—37550. Stone spearpoints from a muck swamp, and other stone points from a shellheap at Cushing, Maine.—Collected and presented by Mr. F. C. HATHORN.

37551—37564. Pipes, tobacco pouches, human scalps, sacred pack, carrying strap, pouch containing sacred shell, rope of sinew and some other articles, the whole being the contents of the sacred war tent of the Omahas. (See letter in report of Curator on p. 411).—Presented by the family of the hereditary chief of the Omahas, through Mr. FRANCIS LA FLECHE and Miss ALICE C. FLETCHER.

37565. Fragment of feather rope from a cave in Utah.—Presented by Mr. A. G. RICHMOND.

37566—37583. Cut piece of shell and fragments of pottery from Walnut cañon, Arizona; bridle, saddle blanket, a hand loom, blanket of primitive pattern, silver tweezers and various articles contained in leather pouches, one of which is elaborately ornamented with silver, all of Navajo workmanship, from Arizona.—Collected by Rev. FREDERIC GARDINER, jr.

37584—37590. Clay pot, pitcher, bowls and saucer of different colors and a wooden mortar and implement, from Surinam, Dutch Guiana.—Collected and presented by Mr. FERNANDO NEUMANN.

ADDITIONS TO THE LIBRARY.¹

Mr. A. Agassiz, Cambridge, Mass. Three Memoirs, four numbers Bulletin, one Report of Museum of Comparative Zoölogy.

Mr. J. M. Allen, Hartford, Conn. One volume.

Dr. Richard Andree, Leipzig, Germany. Five pamphlets.

Athens, Greece. Société Archéologique. One number Proceedings.

Dr. W. C. Barrett, Buffalo, N. Y. Pamphlet.

M. le Baron de Baye, Baye, Marne, France. Pamphlet.

Berlin, Germany. Königlichen Museum. Two pamphlets.

M. A. Blomme, Termonde, Belgium. Pamphlet.

M. le Prince Roland Bonaparte, St. Cloud, France. Folio volume.

Boston, Mass. Archæological Institute of America. Report, one number Bulletin, one number Papers.

Boston, Mass. Massachusetts Institute of Technology. One volume.

Boston, Mass. Museum of Fine Arts. Report.

Dr. Daniel G. Brinton, Philadelphia, Penn. One volume.

Buffalo, N. Y. Buffalo Society of Natural Sciences. Bulletin.

Cambridge, England. Cambridge Antiquarian Society. One pamphlet, two volumes Report and Communications, one number Octavo Publications.

Cambridge, Mass. Harvard College Library. One volume, four numbers Bulletin.

Mr. Lucien Carr, Boston, Mass. Four volumes.

M. Emile Cartailhac, Toulouse, France. Thirteen pamphlets.

Col. Theo. S. Case, Kansas City, Mo. Eleven numbers Kansas City Review.

M. le Comte de Charencey, St. Maurice-les-Charencey, Orne, France. Pamphlet.

Cincinnati, Ohio. Cincinnati Museum Association. Report.

Cincinnati, Ohio. Cincinnati Society of Natural History. Four numbers Journal.

Cincinnati, Ohio. Public Library. Report.

Cleveland, Ohio. Western Reserve Historical Society. One number Tracts.

Mr. John Collett, Indianapolis, Ind. One volume.

Prof. G. H. Cook, New Brunswick, N. J. One volume.

Copenhagen, Denmark. Congrès International des Américanistes. One volume.

Dr. G. M. Dawson, Montreal, Canada. One volume.

Mr. T. A. Dickinson, Worcester, Mass. Pamphlet.

Mr. S. L. Elliott, New York, N. Y. One volume.

Dr. H. Fischer, Munich, Germany. Pamphlet.

Miss A. C. Fletcher, Cambridge, Mass. Three pamphlets.

¹The full titles of books received by the Museum are given in the quarterly Bulletin of Harvard College Library.

Florence, Italy. Società Italiana di Antropologia e di Etnologia. Four numbers Archivio.

Dr. J. G. Garson, London, England. Three pamphlets.

Mr. R. P. Greg, Westminster, England. Two pamphlets.

Dr. E. T. Hamy, Paris, France. One volume.

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NOTES ON THE ANOMALIES, INJURIES AND DISEASES OF THE BONES OF THE NATIVE RACES OF NORTH AMERICA.

By WILLIAM F. WHITNEY, M. D.,

Curator of the Warren Anatomical Museum, Harvard Medical School.

At the request of the Curator a study of the osteological collection of the Peabody Museum has been made with a view to establishing, as far as possible, what diseases existed on this continent among its original inhabitants. The collection is especially valuable for this purpose as it contains such a large number of well authenticated specimens, which have been found in the mounds, and ancient cemeteries in various portions of the country. These remains have been dug up with particular care for the preservation of the bones of the body as well as those of the head. The importance of this cannot be overestimated, for not only can the sex and age be more accurately determined, but also it can be more easily settled whether any pathological changes are the results of a local affection or of a general (constitutional) disease.

The evidences obtained from even the richest collection must be meagre at best and only the existence of a very few diseases can ever be proved. All those which implicate the viscera alone will have to be excluded, and it is only to such as either primarily or secondarily leave marks on the osseous system that any clew can be obtained. Even when alterations are seen here, the possibility of their being the results of the action of the atmosphere, soil or plants must be constantly borne in mind. For appearances are thus produced which closely resemble those arising from morbid processes. And yet on the other hand these same agents may easily obscure a loss of substance which has taken place before

death. In determining whether a loss of substance is of an ante- or post-mortem origin, it is to be remembered that a zone of heightened activity usually surrounds that which occurred during life. This is shown by an increased vascularity or by the formation of new bone or by the thickening of the old bone in the immediate vicinity.

The lesions which have been found may be conveniently grouped into three classes. First, those which represent simply variations from the normal type, so-called anomalies; second, those which have followed injuries; and third, those resulting from disease.

ANOMALIES.

Shape of the head. One of the most striking variations is in the shape of the head produced by a pressure, applied either through design or accident. This should strictly be classed among the injuries, but as distortion of the head observed in life has not had any bad effect upon the health, it is best considered here.

The skulls showing signs of this are either flattened or shortened. The former come chiefly from the northwest coast, while the latter are common in the stone graves and burial mounds of Tennessee and the adjoining states. In the flattened skulls the deformity is unquestionably intentional. The forehead is very low and retreating and the posterior portion of the head rounded and bulging. Such a shape would follow the continued application of pressure on the frontal during the growth of the bones of the head. Most of the skulls from the mounds and stone-graves are short, the forehead and top of the skull high and rounded, while the occipital region is flattened. It has been suggested that such a form might be the result of post-mortem pressure, as it is a well established fact that bones which have lain in some kinds of soil become very much softened and can be readily distorted by handling. But a careful study, especially of the base, will show that this occipital flattening must have been brought about during the period of growth. A good index of this universal action is the angle which the basilar process of the occipital bone makes with a horizontal line with the skull in the normal position. This seems to be considerably larger than in natural heads. It is necessary to state here that the difference of these angles cannot be expressed in degrees and minutes, as it is impossible to find points which are constant

enough for the application of a goniometer. The eye is the best instrument of precision here, just as it is in recognizing the features of different nationalities that are met with in the street. Individual crania may be brought forward as exceptions but it is by the average that the whole is to be judged.

Associated with the posterior flattening are islets of bone interposed in the course of the sutures, so-called Wormian bones, as well as the frequent persistence of the interparietal suture, which causes the occipital to look as if divided in two by a transverse line. The exact way in which flattening produced these results cannot be stated positively. Each of these little bones must have risen from a separate centre of ossification and failed to unite with the main portion. But how the posterior flattening (implying pressure there, accidental or otherwise) could bring about this it is difficult to understand, and any explanation would be simply an hypothesis.

In one skull, 27205, from a stone grave, Brentwood, Tennessee, there is apparently a suture in one of the parietal bones. This is perhaps best explained on the ground of there being a large and abnormally situated Wormian bone. The left parietal is separated into two parts by an indented line following quite closely the temporal ridge and connecting the coronal with the lambdoidal suture. A second skull,¹ 12797, from a stone-grave near Nashville, Tennessee, was found which showed the commencement of a similar line of division. But here although it started from the same place in the lambdoid suture, instead of reaching the frontal, it turned downwards after a short distance and joined the squamous suture. Such a piece as this cut off would be properly regarded as a Wormian bone, and the larger and more extended one is best looked upon in the same light. Whatever view is taken of the matter these two should be studied together.

Another change which can be directly associated with this posterior flattening is a narrowing of the auditory canal in an antero-posterior direction. Here again the eye rather than the compasses must be the guide as to the general outline. And this narrowing, as will be shown farther on, seems to stand in the closest relation to the production of osseous tumors, which are found at the entrance of the canal.

A persistence of the frontal suture occurs in skulls from different

¹ See account of these skulls in Proc. A. A. A. S., Vol. 32, p. 390.

localities but probably not in so large a number as in modern Caucasian heads : 6785, San Mateo, California ; 9144, 9185, Santa Cruz Island, California ; 18277, stone-grave near Nashville, Tennessee ; 27377, 27378, stone-graves near Brentwood, Tennessee ; New England Indian, 2598, Tiverton, Rhode Island ; also 861 from Tennessee, R. C. S. London.²

A bony union of the atlas with the occipital was found several times. This is usually regarded as due to the growth of the par-anostoid process, which springs from an eminence just behind the jugular fossa. In one case the body of the vertebra was more or less absorbed and new bone deposited in places, as if chronic rheumatic arthritis had also been at work : Vancouver's Island, 844, R. C. S. ; California Indians, 9183, Santa Cruz Island and 13287, Santa Catalina Island ; 27290, stone-grave, Brentwood, Tennessee ; 25135, ancient cemetery, Madisonville, Ohio.

The teeth are frequently irregular and marks of extensive caries and alveolar abscesses are found in skulls coming from all parts of the country, but these should be a special subject for study and will not be considered in this paper.

INJURIES.

The next class comprise those bones which clearly show the direct result of violence as seen either in a dislocation or a fracture.

Of the former there was found but one example, which however deserves more than a passing notice.

It was a luxation of the hip in a California Indian, a woman of middle life, 13448, Santa Catalina Island. The right femur had been pushed backwards so that the head rested upon the edge of the great sciatic notch. The acetabulum had been partially obliterated and another socket formed for the bone in its new position. The head of the bone was roughened and the outline of the articular surface irregular. This as well as the greater part of the neck of the femur was covered by a sort of cap of new bone, which was not united to the new socket. It must, however, have been in opposition to it as one of the edges was faceted. The leg was shortened about eighteen cm. and its motion must have been greatly restricted. Such an injury must have been received

² R. C. S. Collection of the Royal College of Surgeons, London.

a long time before death, or these structural changes could not have taken place.

As might be expected from the rough life of these early people, fractures were of frequent occurrence. There seems to be no way of distinguishing those which occurred directly before death from those soon after. Of course any breaks which were made in exhuming the bones may be readily distinguished by the freshness of the edges. In recent cases the hemorrhage between the bones is the important diagnostic feature of an ante-mortem from a post-mortem crack. As this evidence passes away in the process of decay there is left nothing by which to decide whether, for example, a mutilated skull is evidence of a death blow, of the vindictiveness of man upon the dead, or of a fall of earth some years after burial.

Those on the other hand which were not immediately fatal give unmistakable evidence in the attempts at repair with which they are associated. These will be considered in the natural order of the bones from above downwards.

Fractures of the Skull. In 11371, Haunted Cave, Kentucky, there is a depressed break which shows itself externally as an oval indentation in the right parietal bone with a depression of the inner table extending over a larger area. There are no evidences of repair, and therefore its exact relation to the time of death must be a little doubtful.

From Vancouver's Island is a specimen in the Royal College of Surgeons (No. 845) having a fissure in the posterior part of the right temporal bone, probably the result of an ununited fracture. There is very little evidence at the widest part of any reactive inflammation, the edges being simply rounded off. Beyond the opening, however, there is to be seen a faint line as if union had taken place here, while the fissure resulted from the absorption of the bone, at the part where the injury had been more severe. Such a loss of substance is recognized as following head injuries, and specimens can be found in all anatomical museums.³

Among the California Indians, a skull, 13551, San Clemente Island, probably of a female past middle life, has, in the posterior parietal region of the left side directly over the mastoid process, a depression which will admit the tip of the finger. Corresponding

³ No. 973 of the Warren Anatomical Museum illustrates this.

to this on the inner surface an elevation can be felt. The edges of the hole are smoothed off and there is only a slight crack in the bone at the bottom. The openings for the vessels are plainly larger on this side of the head than elsewhere. The injury might have been produced by a blow from a sharp pointed stick or stone. The person, however, must have lived many years after the injury, as appears from the manner in which all the sharp edges of the bone are rounded.

Among the skulls from the ancient cemetery at Madisonville, 25126 is of interest. It is the cranium of a young adult woman, which has an oblong, shallow depression (3.5 by 4.5 cm.) in the posterior and upper part of the left parietal bone. The surface is slightly roughened and through the centre passes an ill-defined fissure which can be followed for some distance in either direction into the normal bone. A blow from a rather long blunt instrument might make a fracture like this, and the irregular surface is due to a slight superficial exfoliation of bone which supervened.

One of the most injured is the skull of a person about forty years of age, 14278, from a stone-grave, Nashville, Tennessee. At first glance it seems as if this trouble were the result of an ulcerative process, such as has been probably at work, but closer inspection shows that an extensive break involving the greater part of the left parietal region was the starting point. The main line of the fracture is indicated by a crack commencing near the middle of the coronal suture and extending downwards and somewhat backwards for about 6 cm. It is bridged over in several places and the edges are rough as if from attempts at repair. A second line starts from the anterior part of the fissure about 1.5 cm. from the suture and sweeps downward and backward in a sickle-shaped curve for about 4 cm. Then it turns sharply forwards and downwards and ends at the upper point of the spheno-temporal suture. This line marks a slight depression of the bone behind it, which has, however, become firmly united in its new position. Above the fissure and extending anteriorly over the forehead is a band with rather irregular edges averaging about 2.5 cm. in width where the outer table has been destroyed and the diploe laid bare by a carious process. Although this is one of the cases in which it is difficult to say how much the appearances have been exaggerated by weathering, still there is no doubt that an inflammatory process has been at work far beyond the original line of

fracture. This is proved by the existence of a narrow ridge of newly formed bone at the lower edge of the eroded portion of the forehead.

The number of cases of cranial fracture is so very small that too much weight cannot be attached to their position and appearance, but in the three last described there is a strong presumption in favor of their being due to intentional violence. The seat, the left side of the head, especially favors this view, as it presupposes that the persons who gave the blows were right-handed.

Fractures of the Clavicle. Of this there are four probable cases. Among the skeletons of the California Indians is a clavicle from 13449 which shows a slight deviation from the normal line accompanied by a little thickening at one point which is suggestive of an injury early in life. From a stone-grave, Brentwood, Tennessee, 27405 shows a like appearance near the middle of the bone, while 15904, from a stone-grave mound, Oldtown, Tennessee, has an old and firmly united fracture of the right bone with marked displacement. 27186, from a stone grave, near Brentwood, Tennessee, is from a middle aged man and the bone was broken near the middle. The ends overlapped for a considerable extent and although they are well united, a marked deformity must have resulted.

Fractures of the Arm. In 27235, stone-grave, Brentwood, Tennessee, the right radius was broken near the middle, and the fragments had slipped by each other for some distance. They are strongly fastened together, but a section through the bone shows that the medullary cavity had not been restored. In the same person, a woman of about fifty or sixty years of age, there was also an oblique fracture of the right tibia in its lower third. In this, with a strong union, there has been but little displacement. The two fractures appear to be of about the same date and are possibly the result of the same accident.

There seems to have been an old injury in 27218, stone-grave, Brentwood, Tennessee, which involved the tubercle of the radius. The bone is thickened at this point and the outline is irregular. This is a very unusual place for a break to occur, and as the joint shows evidence of chronic rheumatic arthritis, it is possible that this inflammatory process may have been the cause of the distortion.

The ulna was found broken in one case, 27285, stone-grave, Brentwood, Tennessee, a man fifty to seventy years old. The injury was at the junction of the middle and lower third. The ends

have grown together solidly, accompanied by the formation of a large callus, and without much deviation from the normal line.

Fractures of the Femur. Two undoubted and one questionable case are in the collection. This last is that of a Californian, 13234, Santa Catalina Island, a man of about fifty years. One femur is distorted and slightly twisted upon itself in such a way as to suggest an incomplete break which must have occurred in early life, as there is no evidence pointing to any change in the structure of the bone.

The others came from stone-graves in Tennessee. In one, 15875, Oldtown, the junction of the lower and middle third of the shaft of the left femur was the place of the injury. The lower piece had been drawn upward and backward for the distance of 9 cm. In this new position it had been firmly soldered by a strong bony mass to the opposing surface of the upper fragment. Both ends are rounded off and the opening of the medullary cavity is obliterated.

In the second 15226, Nashville, the lesion is at about the same place, but a much better line has been preserved, and it has been suggested that this may be the result of an attempt at treatment rather than accident. The bony union is firm and its appearance recalls what would have taken place if the two ends had been joined by a flexible strap and had gone by each other as far as this would permit, and then the strap had suddenly become ossified. The amount of shortening is about 7 cm.

Fractures of the Tibia. Two others, besides 27235 already mentioned, were found. In 26590, ancient cemetery, Madisonville, Ohio, there had been an oblique break of the right bone. The line is still visible passing from the upper part of the lower third on the outside to just over the inner malleolus; the bone is strongly knit together and there is a minimum of deformity.

In 26600, from same place as last, the seat was similar but there is a good deal of roughening from an ossifying periostitis about the point of fracture which extends for some distance both above and below but gradually diminishing.

These are all that have been noticed, and it is remarkable that no case of impacted fracture of the neck of the femur has been found, which is of such frequent occurrence in old people.⁴

⁴The lesions found in the skulls and bones from the caves in Mexico have already been noticed by Miss Studley in the XVI Report of the Museum.

DISEASES.

Exostoses. Although new growths of bone are often the accompaniment of the repair of injuries, yet at times a circumscribed growth of this sort is found which cannot be associated in any way with violence. Such must be called bony tumors, or exostoses. They do not have any tendency to generalize themselves throughout the system and are inconvenient only from the place where they grow.

One of the most frequent seats for these is at the entrance of the auditory canal and the attention of different observers has been attracted to it. Various explanations have been offered for the occurrence of the growth in this situation, but none of these is entirely satisfactory. There are a few facts which are capable of being sustained, the value of which can be better appreciated after a short consideration of the formation of the normal meatus auditorius.

In the symmetrical skull of an adult European, the canal of the ear has in general a round, slightly flaring opening. If the free edge of this is carefully examined, it will be seen that it is not continuous all the way round but at the upper and posterior part there is a gap of varying width. This, however, is filled out by a portion of the mastoid process of the temporal bone, with which the lips bordering the gap are more or less intimately fused. A good idea can be had of this by imagining a short trumpet-shaped tube along one side of which a V-shaped piece has been taken out and then this stopped up again by soldering the lips of the gap against a larger piece of the same material.

If now the flattened skulls are examined it will be found generally that the meatus is narrowed from before backwards and the lips are often slightly thickened and raised up. From this simple thickening all stages can be traced, up to the formation of round osseous growths as large as pease, which in one or two cases have completely blocked up the opening. In almost all cases the exostoses or rather hyperostoses could be directly referred to outgrowths from these lips. In a few cases a tumor was formed in other parts of the wall of the meatus, and there is no reason why they should not happen there as well as in any other part of the skeleton. When one lip alone was affected it was more frequently the inferior.

Other facts, brought out by a study of the cases in which the

hyperostoses occurred, were that the subjects were as a rule men past middle life, with massive bones.

There is no absolute demonstration possible that it is the narrowing of the meatus from posterior pressure in early youth that gives a vicious twist to the tympanic ring and places it in a condition favorable to give rise to such outgrowths in after years. All that can be said is that it occurs more frequently in such heads, than in those that are normal or flattened by anterior pressure which does not apparently affect the shape of the meatus. And further the similarly flattened heads of the ancient Peruvians show also a large per cent affected with hyperostoses.

It is not claimed that this deformity is the sole cause, but that it simply increases a tendency which is universal.

These hyperostoses were found in a greater or less degree in the skulls from the following localities :—

Colorado, La Platte Co., 14,101 ; California, Santa Cruz Island, 9117, 9125, 9126, 9127, 9135, 9143, 9156, 9159, 9166, 9178, 9181, 9189, Santa Catalina Island, 13233, 13234, 14789 ; East Florida, 2909, 2984 ; Mexico, caves in Coahuila, 22646, 22647, 22649, 22652, 22791, 22823, 22827 ; Montreal, Iroquois Indian, 26530 ; Kentucky, mounds, 2342, 8046, circular grave, 8051, 8052, 8054, caves, 8087, 11343 ; Tennessee, stone-graves, 11850, 11968, 12295, 12297, 12300, 12306, 12310, 12323, 12802, 12803, 12805, 12816, 14003, 14006, 14090, 14091, 14096, 14148, 14256, 15211, 15213, 15215, 15219, 15827, 15839, 15903, 15904, 15910, 15913, 15995, 15997, 16003, 16006, 17279, 18248, 18251, 18258, 18274, 18277, 18280, 18405, 18503, 18504, 18505, 18576, 18599, 18609, 18614, 18620, 27223, 27233, 27236, 27262, 27281, 27282, 27284, 27292, 27305, 27313, 27366, 27370, 27377, 27387 ; Iowa, 16092 ; Arkansas, mounds, 21198, 21246, 21260, 21264, 21329, 21334, 21489, 21515 ; Ohio, ancient cemetery, Madisonville, 25123, 26589 ; also from Tennessee, 870, 875, R. C. S., London.

Besides these, other exostoses were seen on various parts of the skeleton but none of very large size.

From the Californian Indians, a skull 9112, Santa Cruz Island, has a slightly raised and eburnated formation of new bone about 1.5 cm. in diameter in the upper part of the right parietal. Skull 9160, from the same place, has a small growth (0.75 cm. in diameter) on the right side of the frontal bone. 9170, Santa Cruz Island, has a similar nodule on the left side, 2 cm. in diameter

and about 2 mm. in thickness. At the posterior third of the sagittal suture in 9185, also from Santa Cruz, is a rough, irregularly shaped, oval exostosis (2.5 cm. long by 1.25 cm. wide by 0.5 cm. thick). This possibly followed some old injury of which it is the only remains. A skull from Santa Catalina Island, 13238, has a small bony tumor on the body of the first sacral vertebra.

Among the skulls from Tennessee and Ohio, there is frequently a tendency to thickening along the alveolar process of the upper jaw. One of the most marked cases is 15825, stone-grave mound, Oldtown, Tennessee, where this has become almost a perfect fringe of nodular tumors, most marked over the molar teeth. Not much stress is to be laid upon these except as one of the local expressions of the rugged character of the bones of this old people. Other specimens are 27200, 27236, and 27282, stone-graves, Brentwood, Tennessee.

Skull 11970, from a stone-grave mound, near Nashville, Tennessee, has a rough growth of bone, which recalls the appearance of the bark of a tree. Its general shape is oval (7 cm. by 5 cm.) and its centre is situated at the point where the sagittal suture joins the lambdoid and from there extends over a portion of both parietals and the occipital. It is in all likelihood to be referred to a blow, as there is an indistinct line passing through it which can be traced for a short distance on either side.

From a stone-grave in the Brentwood cemetery, is one specimen, 27242, which shows a slight thickening over the left orbit. In another is a small exostosis on the inside of the right iliac bone.

In one of the ash-pits in the ancient cemetery at Madisonville, Ohio, was found a metatarsal bone, 27723, with numerous small ivory-like nodules along the shaft.

Periostitis. The next series of lesions are those which are the result of an inflammation of the periosteum. This is manifested by a deposit of new bone of greater or less extent, along the shaft of some of the long bones, especially the tibia.⁵

In 12027, from a stone-grave near Lebanon, Tennessee, the whole shaft is irregularly thickened mostly from two oblong nodular enlargements one about the middle and the other near the upper part. The structure of the deposit is light and porous.

In the same way both tibiae of 14283, stone-grave near Nash-

⁵For the evidence necessary to prove that this, as well as other changes, are the results of syphilis, see Bost. Med. and Surg. Journal Vol. 108, p. 365.

ville, Tennessee, show a generally increased thickness rather more marked at the upper part, but occurring throughout the circumference of the bones, and a section clearly shows the periosteal origin of the trouble.

In 15882, stone-grave, Oldtown, Tennessee, the affection is still more nodular in character and confined to the upper portion. Here the bone itself seems to have taken an active part.

The right tibia of 27232, stone grave, Brentwood, Tennessee, shows a marked enlargement in the inner side, commencing below the spine and extending downwards for about 10 cm. It is in general smooth, but not eburnated, with a tendency to increased vascularity.

A portion of a tibia, 27261, also from Brentwood, has a firm smooth thickening along the crest.

The same general conditions also exist in 27283, 27396, from the stone-graves in Brentwood cemetery, and 12041, stone-grave mound near Lebanon, Tennessee; 26630, from ancient cemetery, Madisonville, Ohio; and 13241, from Santa Catalina Island, California.

The disease known as *chronic rheumatic arthritis* has left its marks in roughness and deposits on the edges of articular surfaces and on the bodies of the vertebræ.

One of the most marked examples is from a Californian, 13553, San Clemente Island, where the edges of the articular surface project some distance owing to these osseous growths.

The following cases of articular affection are all from stone-graves, Brentwood, Tennessee. In 27218, the bones of a man past middle life, both elbow joints are roughened and irregular and the surface in spots looks like ivory. His joints must have grated like a rusty hinge when he attempted to move them, and the stiffness and restricted motion must have been the same as is seen in the rheumatic cripple of to-day. The vertebræ also show a similar condition.

27232. Large bony growths along the edges of the vertebræ. In this case, also, it will be remembered there is thickening of the tibia, which may be considered as another expression of the rheumatic diathesis.

27234. Thickening along the edges of the vertebræ.

27237. This has a thickening of the odontoid process and about the edges of the articular surfaces of the atlas.

27315. A jagged thickening on the borders of the lower articular surface of the right ulna.

27311. The elbow joint is eburnated and the edges of the articular surfaces of right ulna and of the left radius are increased.

27351. A pair of femora from an adult and 27352, a tibia, have a raised ridge of bone about the border of the joint.

Caries. Three remarkable specimens are in the collection.

The first 17223, stone-grave mound, near Nashville, Tennessee, affected the spine and there resulted an extreme case of anterior angular curvature. The disease had destroyed almost the whole of the bodies of the lower cervical, or upper dorsal vertebræ and they had then become united into a firm mass. The spinal column at this point was bent forward so as almost to touch, there being but a few centimetres distance between what are taken to be the bodies of the 4th cervical and 5th dorsal vertebræ. The amount of deformity must have been very great.

In this connection it is curious to note that there are in the Museum, found in the stone-graves of children in Tennessee, little clay images which are faithful representations of persons affected with Pott's disease, and that many of the water-bottles from the stone-graves of Tennessee and from the mounds of Missouri, represent women with hunchbacks.

From the mental acuteness which is so often associated with this malady, it is easy to conceive that such deformed people may have been held in peculiar veneration, or there may have been some superstition in regard to their protective influence. At all events this spine furnishes the veritable proof of the existence of persons so afflicted.

The second case of caries is found in bones, 27372, from a stone-grave in Brentwood, Tennessee. The articulating surfaces of the right femur and tibia forming the knee joint show marked erosions of the smooth hard layer of bone on which the cartilage rests. At first sight this might be attributed to the results of weathering; but closer inspection reveals the fact that there is a marked increase in the size of the openings for the nutrient vessels for some distance from the joint on either side, and that here and there the shafts are roughened by small pieces of newly formed bone. From this the inference is justified that the destruction noted above is the result of a chronic inflammation which in no way differs from the so-called "white swelling" of the knee that is always to be found in the surgical wards of any large hospital.

In the third case, 11891, stone-grave mound, Nashville, Tennessee, it is the ankle joint that is implicated. The opposing surfaces of the left tibia and astragalus are entirely honeycombed by deep depressions separated by irregularly shaped bony trabeculae with rounded or roughened edges. In the lower part of the tibia is seen a cavity communicating with the external surface by a small canal opening through the inner malleolus. Lying free in the cavity is a piece of dead bone, too large to pass through the hole.

These cases are interesting from the fact that such processes are now supposed to be the result of a local tuberculosis, and if this existed it is fair to assume that the internal organs must have suffered also from tuberculosis, the most common seat of which is in the lungs in some form of pulmonary consumption. This assumption is verified by one of the early writers on the habits and life of the Indians, who says of them, "C'est peut être du même principe et de ce qu'ils ont toujours l'estomac et la poitrine découverte, qu'ils contractent une espèce de phthisie, qui les minant peu à peu, en conduit la plus grande partie au Tombeau et à laquelle ils n'ont pu encore trouver du remède."⁶

There remain to note a few skulls which have cicatrices pointing to more or less extensive inflammation, the cause of which is still obscure.

The skull of a female of middle life, 18264, from a stone-grave mound, on the Little Harpeth river, Tennessee, has a number of slight cicatrized depressions, more or less distinctly connecting, passing completely round the head on the line of the forehead. Their form is chiefly linear but in one or two places they cover spots as large as a finger nail. The parietal protuberances and frontal bone show the most extensive marks and from the latter it passes down over the bridge of the nose. The right lachrymal canal is filled by a new and symmetrical growth of bone almost occluding it.

Another skull presenting somewhat similar cicatrices, is 733, from a mound in Kentucky, in the Army Medical Museum at Washington. The whole surface of the parietal, frontal and occipital bones is covered by shallow cicatrices having a firm base, and near which are minute perforations through the intact outer table into the diploe. Some of these depressions look as if they had been made by placing a finger on the softened bone, while others

⁶ Laftau, Vol. II, p. 360, Paris, 1721. This reference was kindly furnished by Mr. Lucien Carr.

are slightly star-shaped or else are linear and anastomose surrounding islands of unaffected bone.

The general and extensive changes of these two skulls can be explained best by the assumption of a syphilitic affection. But the appearances are not quite characteristic. There is wanting the peculiar ivory-like lustre to the healed spots and the accompanying sclerosis of the bone in general.

In No. 20180, an imperfect calvarium from the Stanley Monnd, St. Francis River, are a number of very slightly depressed and radiating cicatrices situated chiefly on the frontal bone. The grooves for the arteries are very deep on the inside; but the bone is not in general sclerosed.

The maxillary bones are of interest and it is a pity that the bones of the face are in such a fragmentary condition that the exact extent of the lesions cannot be satisfactorily made out.

In the right antrum of Highmore the posterior wall is thickened, and the superior is covered with spicular exostoses, while a large linear one reaches from near the opening across the bottom. The whole inner surface of the bone is rough and to it the lower part of the palate bone is intimately blended. Only a narrow strip of the hard palate is left and it is difficult to decide how much of the loss must be attributed to post-mortem action. But just in a line with the lachrymal canal, is a rounded and roughened edge, which must have formed part of a perforation into the mouth that existed during life. A fragment of the right side of the "sella Turcica" with an attached bit of the great wing of the sphenoid and pterygoid plates shows marks of roughening similar to that on the maxilla and palate bones as if an inflammation had extended upwards from this point. The edge of the anterior nares seems more rounded and deeper than normal.

There is less remaining of the left maxilla than of the right, but the same roughness of the internal surface is seen, and this has extended forwards partially filling up the edge of the anterior nares on this side. The socket of the first molar which lies directly beneath has evidently been the seat of an abscess, and it is possible that this stands in a causal relation to the changes seen on the bones bounding the nasal fossæ. It would be difficult, however, to bring this into relation with the cicatrices on the forehead.

At the Army Medical Museum in Washington are the bones of

the face, with the frontal bone attached (748), from a mound in Kentucky, showing the probable effects of a large tumor. This had completely filled up the nasal fossæ and had rounded off the edges of the nasal and maxillary bones forming the boundaries of the anterior nares. The septum of the nose and turbinated bones have entirely disappeared and the ethmoidal cells were freely opened. Through the hard palate there is an oval opening extending from just behind the alveolar process through the entire length of the hard palate, leaving a narrow strip of bone on each side. The edges of this opening are rounded off similarly to those of the nose. Possibly there may have been a congenital cleft palate into the opening of which the new growth extended.

From the foregoing account it will be seen how great is the necessity of preserving the bones of the skeleton as well as the skull, and how much is still to be filled out by the help of future explorations, which will allow what has now to be laid aside to be pronounced upon with certainty.

In closing, thanks are due to the curators of the Royal College of Surgeons in London, of the Société d'Anthropologie in Paris, and of the Army Medical Museum in Washington for the facilities which were so kindly extended for the study of the collections under their charge.

EXPLORATIONS IN OHIO.

By C. L. METZ AND F. W. PUTNAM.

THE MARRIOTT MOUND, NO. 1, AND ITS CONTENTS.

By F. W. PUTNAM.

IN October, 1884, we explored a mound on the land of Mr. Benjamin Marriott, adjoining Michael Turner's farm. This is one of two mounds situated west of the hill on which is the mound and earth-circle forming part of the Turner group in the Little Miami valley. Through this hill, cutting it from east to west, run two deep curved trenches, and the two mounds on Mr. Marriott's farm are opposite the western ends of these trenches. The southern one has been long used as a family cemetery, so we could not explore it. The other, which we explored, has been ploughed over for many years, and is consequently much reduced in height.

At the time of our work it was about two feet high and sixty feet in diameter. Over this lower portion there had been a covering of water-worn stones, brought from the creek bottom. They had been much disturbed by the plough, but they seem to have been arranged as shown in Fig. 1, representing a section of the mound. We dug the mound completely away, and found at its centre a mass of burnt clay in the form of a rude basin about two feet in diameter (Figs. 1, 2, A). The clay (34358¹) of which the basin had been formed was placed on the surface of the ground over which the mound had been erected.

This basin contained a little ashes, in which were a few bits of charcoal, burnt acorns, and several fragments of burnt bones, a few of which are evidently pieces of implements (34359). In the

¹ The numbers given in parentheses are those under which the objects are recorded in the Museum catalogue.



FIG. 1. SECTION OF MARIOTT MOUND, NO. 1. DIAMETER 60 FT.

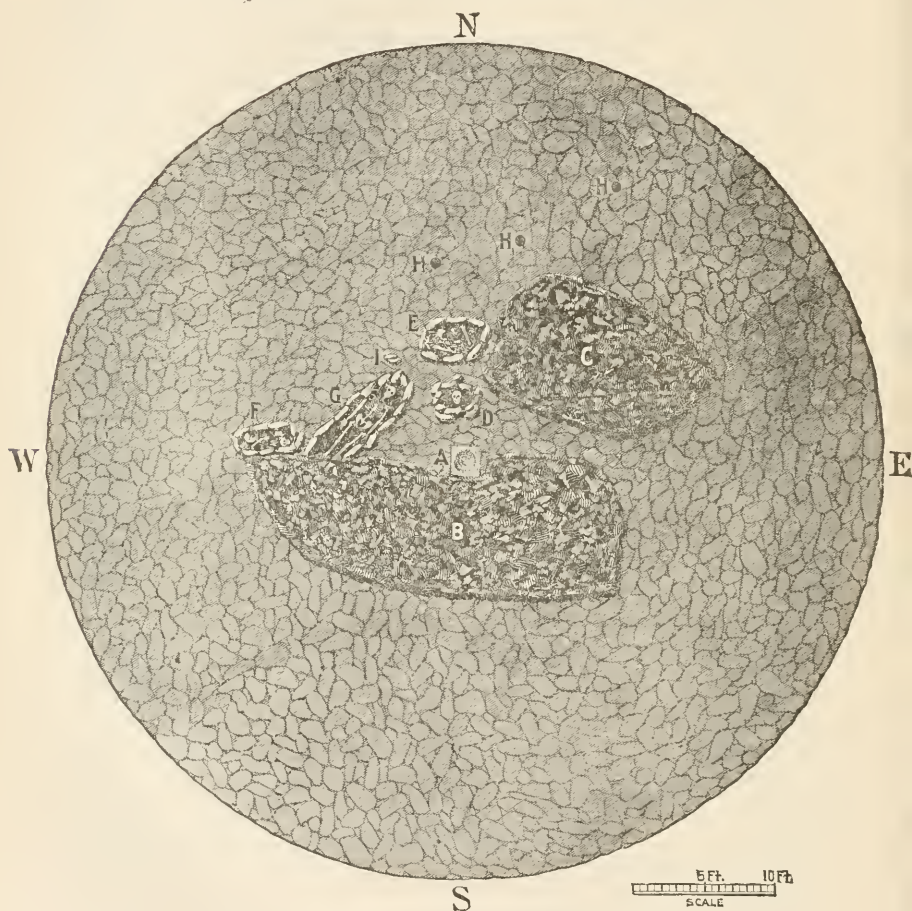


FIG. 2. GROUND PLAN OF MARIOTT MOUND, NO. 1.

EXPLANATION OF FIGURES 1 AND 2.

- | | | | |
|----|---|----------|---|
| A. | Basin of burnt clay in centre of mound. | F. | Skeleton with perforated bear's teeth and copper plate. |
| B. | Burnt earth, stones, and ashes. | G. | Extended skeleton with ear ornaments. |
| C. | Burnt earth, stones, and ashes. | H, H, H. | Post-holes. |
| D. | Skull surrounded by stones. | I. | Shell. |
| E. | Skeleton with implements in handles. | K, K. | Beds of sandy clay. |

basin were also eleven pottery beads, spherical in shape and half an inch in diameter (34362), four beads cut from shell and finely polished, about half an inch in length and a quarter-inch in width (34363), and five small shells of the genus *Marginella*, each of which had its apex cut off so as to permit of stringing as ornaments (34364).

Partly surrounding this mass of burnt clay was a mass of burnt earth, stones, ashes, and charcoal, from eight to ten inches in depth, irregular in outline, and extending about fifteen feet to the west, eight feet to the south, and ten feet to the east (Figs. 1, 2, B). The bottom of this burnt material was about seven inches above the surface over which the mound had been made. About six feet northeast of the centre of the mound was a similar burnt space, about ten feet in width and fifteen in length (Fig. 2, C). Under these burnt portions was a thin layer of sandy clay, which had been placed on the surface of the ground. Over the rest of the base of the mound were one or two layers of stones.

In the ashes and earth on these burnt areas, and in the adjacent earth, were over six hundred fragments of pottery (34408-34437), varying in size from one to five inches in length. These fragments are pieces of bowls and pots of common sizes, which were well made and well burnt. The clay apparently was mixed with a fine sand. A few of the pieces contain bits of shell. Many of the pieces show that the bowls were decorated neatly with incised lines and punch-marks in different designs. Others are cord-marked, and many are plain. One fragment is that of a conical foot, probably one of three around the base of the vessel. Among all the pieces there is not a single handle, although there are many portions of the lips and sides of vessels.

Scattered about in the same manner were between two and three thousand broken and split pieces of bones of animals (34407), principally of the deer and bear, but including several other species of mammals and a few of birds, which have not yet been determined. With these were found nearly a hundred shells of river clams, *Unionidae* (34388), a portion of a clam-shell (34389) which had been cut around the edge, possibly a piece of a spoon; many small pieces of mica (34360), some of which are fragments of ornaments; and also several objects of bone and stone, as follows.

A needle (34390) made from a splinter of bone, nearly five inches long, an eighth of an inch in diameter in its upper part, flattened

at the head, through which a small eye has been drilled. This needle is well made and highly polished. It is shown in Fig. 3. Pieces of four other needles (34390) of the same character and size were also found.



FIG. 3. BONE NEEDLE.



FIG. 4. BONE AWL.

An ornamented awl (34392), formed from a piece of bone, probably the metatarsal of a deer. As shown in Fig. 4, the handle is ornamented with rows of fine cross-cut lines, on each of the two surfaces shown in the figure. On the ridge of bone between these

two carved surfaces are eleven slight notches. The end of the handle is squarely cut, and has two distinct grooves. The under surface is unfinished, showing the cavity of the bone. The cellular portion of this part of the bone is so slightly worn that it seems probable this portion was filled with some substance the better to adapt it to the hand. The total length of this implement is four and one eighth inches.

Eleven other awls or points of bone (34391) are made by simply sharpening splinters of bone from two to three and a half inches long. These are made from pieces of ribs and splinters of mammal and bird bones, and are similar to hundreds of other bone points which have been found in various places the world over.

There are also pieces of five other bone implements with more or less chisel and spatula-shaped ends. One of these (34393) is a fragment two inches long, made of a piece of thick bone ground on one side to a narrow chisel-like edge one fourth of an inch wide. Another (34394) is made from a piece of a deer's bone about three inches long and one inch wide, and has a round, smooth, and thin edge at one end. Three others (34394, *a*) are pieces of ribs which have been split, and rounded and smoothed at one end. An ulna of a deer (34397), the olecranon of which is so often used for making implements, has had the slender portion detached by cutting the bone partly through from opposite sides, and then snapping off the end. The cuts made by a flint knife or flake are distinctly seen in this specimen. Three points cut from deer's antlers (34396), and another (34395) which has been hollowed, probably as a socket for some implement, close the list of objects of bone and antler.

Of objects of stone we found four small masses of gray flint, from which pieces had been struck off, and one hundred and eleven chert, jasper, and chalcedony flakes of various colors and sizes (34403). Of the same material are seventy-seven thin flakes from one and a half to two and a half inches long and from a quarter to about half an inch wide (34406), and also a core (34405) from which such long narrow flakes had been struck. Nine of these flake-knives are shown in Fig. 5. of natural size. They are of the same character as the obsidian flake-knives from Mexico, and evidently were made for similar purposes. We have found hundreds of these narrow flakes during our explorations of the Ohio mounds, and also several of the cores. A trial at cutting wood, antler,

bone, and mica with these flakes, is at once convincing that they were well adapted for knives. Three thin flint flakes (34404) from one and a quarter to two inches long and about one inch wide, are of interest, as they show secondary and fine chipping along their edges.



FIG. 5. FLAKE-KNIVES.

Five fragments, points, and bases of large chipped points of flint (34400) are evidence of good work of this character, while a slender point about two and a quarter inches long, with a simple shank, is very rudely chipped from a poor piece of chert (34399).

The only fine chipped implement found in the burnt portions of the mound is shown of natural size in Fig. 6. This has serrated edges, and may be a large arrow-head (34398). It is made from a dark gray flint. A fragment of polished stone (34401), probably the central part of a celt, is another evidence that considerable refuse material was gathered at the spot where the mound was made, as well as ornaments and implements of value and importance to the people. A piece of clay slate (34402), a quarter of an inch in thickness, has been cut into the shape shown by Fig. 7, which represents the stone of full size in outline. Fragments of a fossil plant (34361), the cavities of which contained considerable oxide of iron, were also found in the ashes.



FIG. 6. CHIPPED FROM GRAY FLINT.



FIG. 7. CUT FROM SLATE.

Five feet north of the centre of the mound, and between the southern and northern burnt portions (Fig. 2, D), were a number of small stones, arranged on the surface of the ground at the bottom of the mound, surrounding a human skull (34365) with its under jaw. No other bones were with the head, not even fragments, except those belonging to the skull; neither were there any objects of any kind buried with it. The skull is brachycephalic,¹ and is that of a youth who was just getting his wisdom teeth. A hole a quarter of an inch in diameter has been bored through the occipital bone at a point three eighths of an inch back of the centre of the margin of the foramen magnum. The position of the hole

¹ Length, 170; breadth, 142; breadth index, 835. Height, 140; length, 170; height index, 824.

naturally suggests that a cord was passed through it and out of the great foramen for the purpose of suspending the skull. In this connection it is well to recall the several perforated skulls surrounding the two skeletons in the intrusive pit in the large mound of this group to which reference is made in a former report.

Nine feet north of the centre, near the western edge of the north-eastern burnt space were the following human bones (34370), probably of a man: a piece of the left parietal, a right molar, and the left condyle of the lower jaw; pieces of a right femur, humerus and ulna of each side, a right radius, and a right scapula; several finger and toe bones, fragments of ribs, vertebræ, and long bones, all representing a single skeleton. These bones were in a group, out of natural order, eighteen inches above the base of the mound, and were surrounded by small stones (Fig. 2, E). The fact that many of the bones of the skeleton were missing, while those which were found were fairly well preserved and out of natural order, suggests a secondary burial. Ploughing over the spot may have caused some of the fractures, and some of the pieces may have been pulled from their place of deposit by the plough, but there were no fragments about to suggest that such was the case. The broken lower end of the left femur has been gnawed by rodents.

Mixed with the human bones were a couple of handfuls of fragments of bones of animals (34378), a few of which had been burnt, and pieces of a small antler of a deer. There were also two pieces of bone and a piece of antler (34372) which had been cut, and are probably portions of pointed implements.

In a pile, in one corner of the enclosure and partly under some of the human bones, were ten handles, more or less perfect, made of antler (34371). Five of these had holes in one end, and while they vary in size from three to four inches in length, and from half an inch to an inch in diameter, they are of the shape and character of the handle shown in Fig. 8, which is a full-size illustration of one of the lot in which a point of bone was still inserted in the handle (34374). Another of the handles, made from a point of an antler, has a groove cut across its widest end, in which was resting a triangular point, chipped from a dark chert (34373), as shown in Fig. 9, also of full size. Of course this is a knife, and it is a good illustration of the transition from arrow-points to knives. These specimens were taken up with care, and both Dr. Metz and myself made careful observations of the handles with their points in place



FIG. 8. POINT, MADE OF A SPLINTER OF BONE, IN HANDLE MADE OF ANTLER.



FIG. 9. CHIPPED STONE-POINT IN HANDLE OF ANTLER.

as they lay in the earth. The method by which this stone point was fastened to the handle is a matter of conjecture, but it is probable that it was held in its place by a lashing of sinew and a mass of glue or gum.

With the group of handles was a finely chipped point (34375) of light banded flint, with slight tangs and a broad stem, which is broken off. This point is finely serrated, and is about the size of the one figured in the handle. It is probable that it also was formerly mounted in one of the handles.

Two triangular flakes of white flint (34376) and three small bits of pottery (34377) conclude the list of objects found with the human bones in this small grave.

Twelve feet west of the centre of the mound (see Fig. 2, F), and about one foot above the bottom, were portions of another human skeleton, also surrounded by stones. The bones (34366) were out of natural position, and were probably a secondary burial. They are probably those of a man of middle age. The portions preserved consist of a nearly perfect but much warped cranium, the under jaw, vertebrae, ribs, a nearly perfect pelvis, and fragments of the right tibia and fibula. The teeth are all present and in good condition, except the left lower wisdom tooth, which has a large carious spot just above the neck. A few of the ribs and a portion of the pelvis are stained green by a large copper plate which lay partly upon these bones, and over several bear's teeth described farther on.

The copper plate (34367) is of the same shape and character as several found in the large mound of the Liberty works, but is the first of the kind we have found in the Little Miami valley. This plate is represented of one-quarter size in Fig. 10. Although this large plate, at first sight, has the appearance of having been cut from a sheet of rolled copper, a careful examination of its surface leads to the belief that it was hammered from a sheet of native copper. There are inequalities over the surface, and several places where the copper is distinctly laminated, and the edge of the outer piece has separated from the mass, as can be seen by a close inspection of the figure, which is made by the photo-engraving process. The edges, particularly at the rounded corners of the plate, are thinner than other portions, and the plate varies in thickness from one to one and a half millimeters. I have tried the experiment of hammering a sheet of native copper, placing the piece on

a flat stone and pounding the opposite surface with an ordinary hammer-stone, and I find that I can produce a surface, on a sheet of the same thickness with the plate, which is as hard and compact as the surface of the plate. The copper of which this plate is composed is considerably corroded, and the outer surface has changed to a green color, probably a carbonate. One surface is smoother

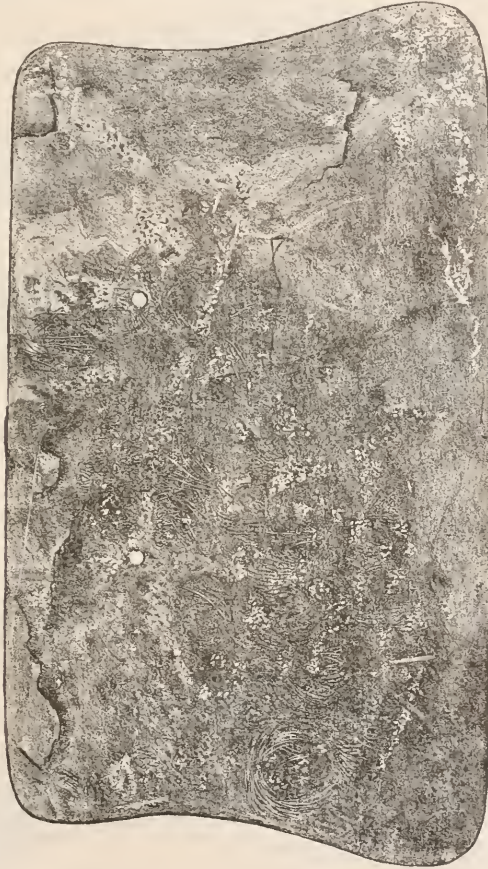


FIG. 10. BREAST ORNAMENT MADE OF COPPER.

than the other, and there are slight traces of this having been in contact with a woven fabric, the meshes of which are indicated by minute lines on the copper. I may state here, that on similar copper plates from the Liberty group, in a few instances, cloth was well preserved by the action of the copper; and I may add, also, that one

of these plates was found in the large mound of the Liberty group resting on bones of the chest of a skeleton, which was extended at full length, and it is probable that such plates are ornaments which were suspended over the breast by passing a cord through the two holes. The several plates of this character which I have seen are of the same general shape, but they vary in size from considerably smaller to slightly larger than the one from the Marriott mound. On one surface of the plate before me there are several minute wavy and curled lines close together and covering each other. These are made evidently by a formation of a carbonate of copper about hair of some kind, perhaps of the person with whose bones the plate was found.

The following are the dimensions of the plate. Width across lower edge, nine inches; across upper edge, eight and one fourth inches; across centre, eight and one eighth inches. Length, five and one eighth inches. Distance between holes, two and five eighths inches. Diameter of holes, about one eighth of an inch. Distance of holes from upper margin, one and a quarter inches.

Lying together immediately under the copper plate, and partly in contact with it, were six canine teeth of bears. These teeth are from three and a quarter to three and a half inches in length, measured in a straight line from base to point, and although they are slightly larger than several teeth of black bears with which I have been able to compare them, I presume they are of the same species. Four of these teeth (34369) are probably from one animal. Each tooth is perforated by a lateral hole bored near the edge at the point of greatest curvature of the root, as shown in Fig. 11,



FIG. 11. BEAR'S TOOTH, SHOWING LATERAL PERFORATION.

which represents the tooth of natural size. By passing a cord through this hole, the tooth could be fastened to any object, or worn as an ornament. Two of the teeth (34368), perforated on

one side in the same manner as the others, have an additional hole bored through near the end of the root. On the side opposite the lateral perforation, this hole is counter-sunk in order to receive a large spherical pearl, about three eighths of an inch in diameter. The pearls, although now chalky from decay, were in place, as shown in Fig. 12, when the teeth were found.

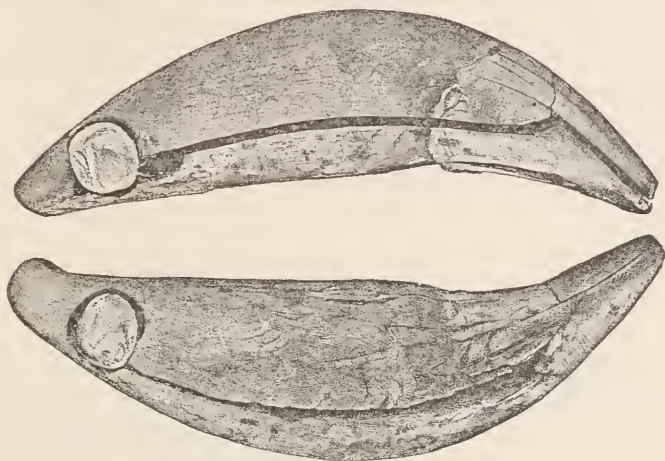


FIG. 12. BEAR'S TEETH WITH PEARLS INSERTED.

Seven feet northwest of the centre of the mound we found a human skeleton, extended at full length and surrounded by stones (Fig. 2. G). The body had been laid on its back in a grave dug in the hard clay, and it is evident, from the fact that the foot of the grave was under a portion of the mass of burnt stones, earth, and ashes, that it was a primary burial over which the mound was erected after the rites which here took place.

The parts still remaining of this skeleton (34379) are light and crumbling, and consist of fragments of the cranium, the under jaw, parts of all the long bones, portions of the pelvis, a piece of scapula, and fragments of ribs and vertebrae. These show that the individual was an adult of light frame, possibly a woman. The condition of the jaws points to considerable disease of the teeth, for all the molars of the lower jaw except the wisdom tooth of the left side, with the first right molar of the upper jaw, had been lost during life, while the first upper molar of the left side has its roots enlarged by inflammation. The remaining teeth are somewhat worn.

Four inches from the left side of the head were the remains of four of the spool-shaped ear ornaments made of copper (34386), with which were about a dozen large pearl beads (34381, a). In contact with what remained of the bones of the neck were four bear's canine teeth (34384) and more than two hundred pearl beads (34385). With the copper-stained bones of each hand were portions of an ear ornament of copper (34380), of the same shape as those near the head, but in each instance with one disk covered with a thin plate of native iron. With each of these ornaments were pearl beads, about fifty in all. On the bones of the chest rested the beautifully chipped point of white flint (34383), shown in Fig. 13. This chipped point is from two to seven millimeters thick, eighty long, and thirty-four wide, and, very likely, is the blade of a knife.

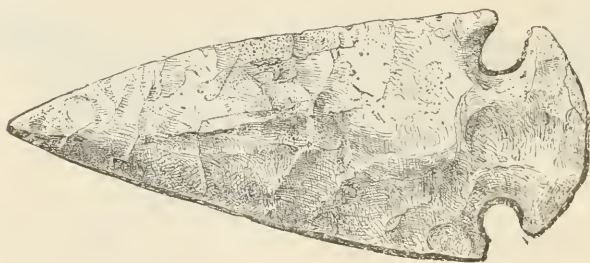


FIG. 13. POINT CHIPPED FROM WHITE FLINT.

The pearl beads found in the several positions mentioned are natural pearls, probably obtained from the several species of *Unio*-*nidae* in the Ohio rivers. In size they vary from a tenth of an inch to a half-inch in diameter, and many are spherical. They are neatly drilled, the larger from opposite sides. These pearls are now chalky, and crumble on handling; but, when fresh, they would have formed brilliant necklaces and pendants.

The four canine teeth found at the neck of the skeleton are a little larger than those found with the skeleton previously mentioned, three of which are shown in Figs. 11 and 12. If they are those of the black bear, that species must have been larger than at present, judging by the size of these teeth, of which the smallest is three and a half inches, and the largest three and nine tenths inches long. Is it not likely that these are the teeth

of the grizzly bear? Upon one side of each tooth are two oblique perforations, meeting at a common point, so that a string pushed down through one hole passes up out of the other. (See Fig. 11.)

The ear ornaments mentioned as found near the head of the skeleton, and with the bones of the hands, are like those found in other mounds of this instructive group, to which I have called attention in former Reports. The first which came into my hands were described in 1882 in my account of "Copper Objects from North and South America, contained in the Museum" (15th Report, p. 83). Since then a large number of objects of copper have been added to the Museum, principally from explorations in Ohio, and among them many of these ornaments. In 1882, following Dr. Rau, I used the term "spool-shaped ornaments," as their proper designation was not then known. In that paper the method of their manufacture is pointed out, and in part illustrated by figures (Figs. 18, 18 *a*, and 19) of the two specimens found with burnt human bones in a mound at Franklin, Tenn. All of these ornaments since obtained, particularly those from the altar of the large mound in the Turner group, mentioned on page 117, 16th Report, show that, with slight individual modifications, such as strengthening cross-bars of copper between the disks, and slight variations in the method of forming the central part connecting the opposite disks, there is little to add to the published description. That these objects are unquestionably ear ornaments, I regard as conclusively proved by the fact that, in our explorations of the Turner group, to which this mound belongs, in three instances we have found pairs, one on each side of the skull, in contact with the temporal bones, as mentioned on page 174, 16th Report, and that the small terracotta figurine of a man (p. 173, same Report) has such a stud-like ornament, of large size, in each ear. Many of these ornaments were found in the mass of material from the altar of the large mound, and among them there were several either partly made of, or covered with, thin plates of meteoric iron (p. 171, 16th Report).

In the mounds of the Liberty group in the Scioto valley we also found several of these ornaments of copper (pp. 405-407, 18th Report), some of them covered with thin plates of meteoric iron, like the two with the finger-bones of the skeleton now under consideration, one of which is represented in Fig. 14. The cor-

responding disk from the other hand is covered in like manner, but the thin covering of iron has nearly rusted away.

Fig. 14 shows the outer of the three concavo-convex plates which, closely overlaid, form one disk of an ear ornament; and in Fig. 15 are seen the two inner plates, with the central cylindrical column, which after passing through them is split at each end and clinched. These



FIG. 14. OUTER SURFACE OF EAR ORNAMENT.



FIG. 15. CENTRAL PORTION OF EAR ORNAMENT.

plates rotate loosely upon the column, around which a twisted vegetable fibre is wound three times.

Fig. 16 represents the surface of the middle one of three plates, showing a small central hole. A bit of copper, carried through the central column, passed through these holes, holding together the



FIG. 16. UNDER SURFACE OF CENTRAL PLATE.



FIG. 17. UPPER SURFACE OF UNDER CONCAVE PLATE.

inner and middle plates, which were further secured by turning the edge of the middle plate under the rim of the inner plate, shown in Fig. 17, where may be seen the end of the cylindrical column in the

central depression. Over the inner and middle pieces, thus closely applied, was laid the outer piece, whose edge turned in secured all three plates together.

Fig. 18 is an accurate representation of the outer surface of one of the copper ornaments found near the skull. Over the surface figured are little ridges of green carbonate of copper that appear to have been formed in the little furrows of the skin, probably of the neck, when it was in contact with the ornament. This disk and the corresponding one of the pair are thicker than usual, and the edges of both show that they are made up of two plates closely united to a third or under plate, as described above.



FIG. 18. OUTER SURFACE OF EAR ORNAMENT.

Two of these ear ornaments found near the head have vegetable fibre wound around the central column, as represented in Fig. 15. One of these is so well preserved as to retain all the parts in place, while all the others are more or less in pieces. The number of these ornaments found with this single skeleton, six in all, or three pairs, none of them in such a position as to indicate that they were in the ears of the body at the time of burial, might be taken as evidence that they are not ear ornaments, if it were not for the conclusive evidence to the contrary referred to above. These may have been placed with the dead as tributes, and need not have been the personal property of the individual in life. The number of these ornaments found on the altar of the great mound, some covered with native iron, others with native silver, shows that they were regarded as valued offerings, in keeping with the thousands of pearls and other ornaments thrown upon the altar fires during the ceremonies which there took place. Among the terra-cotta figurines from one of the altars are several representing women; but it is only the men who are represented with ear ornaments. This fact also suggests that those found with the skeleton were offerings, as it is probably that of a woman.

Two feet north of the head of the grave containing the skeleton and objects last described was a large marine shell (34387). The shell is much decayed and broken, but its central portion had been cut out. Its position in the mound is indicated by the letter I in Fig. 2.

It only remains to add to this description of the mound and its contents, that in the northern portion, fourteen to twenty-two feet from the central basin, we found three soft spots in the hard clay under the mound, such as we have found to indicate places where posts or large stakes have been. The position of these post-holes is shown by II, H, H, Fig. 2. It is likely that these posts projected through the mound; but as they had long since gone to decay, leaving only a little fine vegetable mould at the bottom of the holes, and as the mound had been planted over for so many years, this could not be determined. I may add, that in many of our explorations of mounds we have found similar holes, some showing where the outer layer of wood or bark of the post had been by a deposit of bog iron, formed by infiltration from the clay above; and, following out the arrangement of the holes, we have been able to show that in some cases a wooden structure had occupied the site where the mounds were afterwards built, and by tracing the position of the posts have even ascertained that the mounds sometimes enclosed such structures, which were not simply central chambers, but structures which included extensive rows of posts, as in the case of the largest mound of this group.

NINETEENTH REPORT.

(467)

ABSTRACT FROM THE RECORDS.

MONDAY, JUNE 22, 1885. A Special Meeting of the Board of Trustees was held this day at 4 P. M., at the house of the Hon. Robert C. Winthrop in Brookline.

Present: Messrs. WINTHROP, GRAY, LYMAN, SCUDDER, and WHEATLAND.

Mr. LYMAN reported that Mr. HOOPER expressed his gratitude to the Board for the honor conferred by his election as a Trustee and Treasurer, and regretted that he was obliged to decline accepting the position in consequence of his other duties.

It was voted that Mr. LYMAN act as Treasurer *pro tempore*.

It was then voted to proceed to the election of a Trustee and Treasurer in place of the late Mr. JOHN C. PHILLIPS.

Mr. LYMAN proposed as a Trustee and Treasurer Mr. FRANCIS C. LOWELL, who was unanimously elected.

After remarks upon the subject of filling the Professorship of American Archaeology and Ethnology established by Mr. Peabody in his "Instrument of Trust," dated October 8, 1866, it was agreed by the Board that the Professorship should be known as the Peabody Professorship of American Archaeology and Ethnology.

On motion of Professor GRAY it was voted unanimously that the present Curator of the Museum, Mr. FREDERICK WARD PUTNAM, be nominated to the Corporation of Harvard College to fill this position.

It was then voted that the subject of expending the principal of the Building Fund in enlarging the present Museum building, be referred to Messrs. GRAY, SCUDDER, and LYMAN to report at a future meeting.

FRIDAY, APRIL 9, 1886. The Annual Meeting of the Board of Trustees was held at the house of the Hon. Robert C. Winthrop, Boston, this day at 3 P. M.

Present: Messrs. WINTHROP, GRAY, SCUDDER, LOWELL, and the CURATOR.

The following communication, received by the Chairman since the last meeting, was read and ordered to be placed on the records:—

“At a meeting of the President and Fellows of Harvard College in Cambridge on Commencement Day, June 24, 1885, a letter was received from Mr. WINTHROP as Chairman of the Trustees of the Peabody Museum, giving notice that F. W. PUTNAM had been nominated unanimously by the Trustees as the Peabody Professor of American Archaeology and Ethnology in the University.

“Mr. PARKMAN reported verbally for the Committee in relation to the Peabody Museum, that in the opinion of the Committee a Peabody Professor of American Archaeology and Ethnology ought now to be elected, and that FREDERICK WARD PUTNAM, A.M., having been duly nominated as such by the Trustees of the Peabody Museum, ought to be chosen.

“*Voted* to establish a Peabody Professorship of American Archaeology and Ethnology in the University.

“*Voted* to communicate this vote to the Board of Overseers, that they may consent thereto if they see fit.

“*Voted* to proceed to the election of a Peabody Professor of American Archaeology and Ethnology. Whereupon ballots being given in it appeared that FREDERICK WARD PUTNAM, A.M., was elected.

“*Voted* to communicate this election to the Board of Overseers, that they may consent thereto if they see fit.

“A true copy of Record

“Attest:

E. W. HOOPER, *Secretary.*”

The Chairman, Mr. WINTHROP, then presented the following statement:—

I propose, Gentlemen, before calling upon our Curator for his Annual Report, — which is the principal subject of interest at this meeting, — to make a brief statement of facts which may well find a place in the record of our proceedings.

Twenty years will soon be completed since the Institution of which we are the guardians was founded. Mr. Peabody's Letter of Trust was dated October 8, 1866. That Letter provided for “the foundation and maintenance of a Museum and Professorship of American Archaeology and Ethnology in connection with Harvard University.” For this purpose the sum of \$150,000 was given to the Trustees named in the Letter, to be paid to them on learning of the assent of the President and Fellows of Harvard College to the terms of the Trust.

The money was paid to the Trustees, accordingly, on the 3d of November following, the assent of the President and Fellows of the College having been learned; and the Trustees have now gone on, for nineteen years, executing the provisions of Mr. Peabody's Instrument of Trust, and making Annual Reports to the President and Fellows.

During the first eight years of this term we had the invaluable services of the late eminent Jeffries Wyman, whose name will always be associated with the foundation and organization of the Museum, and of whom it is no disparagement of others to say, that he would have been unanimously nominated as the Professor, had he still been spared to us.

One provision of the Trust Instrument of Mr. Peabody is as follows: "Until this Professorship is filled, or during the time it may be vacant, the income from the fund appropriated to it shall be devoted to the care and increase of the Collections."

This language is very important in construing the terms of the Trust, as defined by Mr. Peabody, and as assented to by the College. It is not, "until the Professorship is created or founded," but "until this Professorship is filled, or during the time it may be vacant." Mr. Peabody made what Dr. Hill, then President of the University, in his Annual Report of 1867, styled "his princely gift," for "the foundation and maintenance of a Museum and Professorship," and I have always thought that the Professorship was virtually established by the acceptance of the endowment. It might well date from the payment of the money, as simultaneous with the establishment of the Museum,—both being included in the same sentence in which the purpose of the gift is declared.

But, under the discretion given to them in the provision which has been cited, the Trustees have not been in haste to have the Professorship filled. They have erected a substantial and commodious fire-proof Building for the Museum, upon land given for that purpose, according to Mr. Peabody's requirements, by the President and Fellows of the College, and have employed the income of the Professor's Fund for the care and increase of the Collections. The Building and all that it contains have now become the absolute property of the College.

Under these circumstances, the Trustees came to the unanimous conclusion, at a meeting in June last, that the time had arrived when a due regard to the terms and conditions of Mr. Peabody's Gift rendered it obligatory on them to take the initiative in filling the Professorship, by exercising their right of nomination, so that the lectures and instruction expressly indicated in the Letter of Trust might no longer be deferred.

It did not occur to any of the Trustees that any previous question could be raised as to the founding of the Professorship to which the College had agreed in 1866, and they therefore confined themselves to making a nomination and communicating it to the President and Fellows. That nomination was happily accepted and confirmed by the President and Fellows on the day of its being received, and the person nominated was elected, and we had hoped that long before this time our Professor would be installed.

But the course of proceeding in 1866 having been somewhat informal, and there being no mention of the technical establishment of a Peabody Professorship of Archæology and Ethnology on the records either of the Corporation or of the Overseers, it was thought necessary by the President and Fellows to accompany the communication of the nomination of a Professor with a formal proposition to establish the Professorship. This was a measure in its nature previous, and first and separately to be considered; and owing largely, it is believed, to the want of a full understanding of the circumstances of the case, and of the moral obligation to recognize such a Professorship resulting from the acceptance of the terms of Mr. Peabody's Letter of Trust, the Overseers at first rejected the proposal. At a subsequent meeting of the Board, the question was reconsidered, and the Overseers concurred with the Corporation in establishing a Peabody Professorship of American Archæology and Ethnology. But

no further step was taken, and the nomination of our Curator to the Professorship, unanimously made by this Board of Trustees, and accepted and ratified by the President and Fellows, has not yet been acted on, either favorably or adversely, by the Overseers.

This is believed to be an exact statement of what has occurred since our last meeting, and of the present condition of a question which we all earnestly desire to see settled. There seems nothing for us to do but wait and hope. It is an embarrassing state of things for the Trustees, and still more for our worthy Curator. We can only trust that before we meet at Cambridge in June next, to visit the Museum, we may be authorized to greet our Curator as a Professor.

On motion of Professor GRAY it was voted that the remarks of Mr. WINTHROP be printed, that they be placed on the records of this meeting, and that a copy be sent to the President of the University.

The report of the TREASURER and the cash account of the CURATOR were read and ordered to be printed.

The CURATOR called attention to the importance of continuing the explorations begun by the Museum, and it was voted to print his statement and request contributions in aid of the work.

Messrs. GRAY and SCUDDER referred to the scientific value of recent explorations conducted by the CURATOR, who was requested to prepare an account of them, for publication by the Museum at as early a time as possible.

The Report of the CURATOR was read and ordered to be printed.

The meeting then adjourned, to meet at the Museum, in Cambridge, at such time in June as the Chairman may appoint.

HENRY WHEATLAND, *Secretary*.

REPORT OF THE TREASURER.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology, in connection with Harvard University.

The TREASURER respectfully presents the following Annual Report:—

Income Account.

1885.

July 1.	Received Int. \$200	United States 4 per cent Bonds, April and July coupons	\$ 4 00
July 1.	"	" \$45,000 Pueblo and Ark. Valley R. R. 7's	1,575 00
Aug. 1.	"	" \$62,000 Chic., Burl. and Quincy R. R. 4's	1,240 00
Aug. 1.	"	" \$51,000 Kansas and Missouri R. R. 5's	1,350 00
Oct. 1.	"	" \$200 United States 4 per cent Bonds,	2 00

1886.

Jan'y 1.	"	" \$200 United States 4 per cent Bonds,	2 00
Jan'y 1.	"	" \$45,000 Pueblo and Ark. Valley R. R. 7's	1,575 00
Feb'y 1.	"	" \$62,000 Chic., Burl. and Quincy R. R. 4's	1,240 00
Feb'y 1.	"	" \$51,000 Kansas and Missouri R. R. 5's	1,350 00
			<hr/> \$8,338 00

1885.

July 1.	Paid for Safe in Union Safe Deposit Vaults	. . . \$ 30 00
July 1.	" F. W. Putnam, Curator, on account of Building Fund	. . . 1,529 00
Aug. 1.	" F. W. Putnam, Curator, on account of Professor Fund	. . . 1,246 20
Aug. 1.	" F. W. Putnam, Curator, on account of Museum Fund	. . . 1,246 20
Aug. 1.	" F. W. Putnam, Curator, on account of Building Fund	. . . 97 60

1886.

Jan'y 1.	"	F. W. Putnam, Curator, on account of Building Fund	1,579 00
Feb'y 1.	"	F. W. Putnam, Curator, on account of Professor Fund	1,246 20
Feb'y 1.	"	F. W. Putnam, Curator, on account of Museum Fund	1,246 20
Feb'y 1.	"	F. W. Putnam, Curator, on account of Building Fund	117 60
			<hr/> \$8,338 00

The Building Fund now amounts to	. . . . .	\$60,321 50
" Professor " " " "	. . . . .	45,241 13
" Museum " " " "	. . . . .	45,241 12
		<hr/> \$150,803 75

FRANCIS C. LOWELL,

Treasurer.

BOSTON, MARCH 15, 1886.

CASH ACCOUNT OF

Dr.

F. W. PUTNAM, *Curator, in Account with Peabody*

1885-86.

Balance on hand from last account	\$3017 50
Received from Francis C. Lowell, Treasurer	8308 00
“ “ Publications	52
“ “ N. E. Telephone Co.	16 33
“ “ Express refunded	2 40
“ “ the late Hon. Stephen Salisbury, 2nd sub- scription	200 00
“ “ Prof. E. N. Horsford, subscription	100 00
“ “ H. A. Homes, Esq. 2nd “	5 00
	<hr/>
	\$11,649 75
	<hr/>

\$11,649 75

Cambridge, March 16, 1885.

THE CURATOR.

Museum of American Archæology and Ethnology.

Cr.

1885-86.

Paid as per vouchers numbered.

1	Cases, stock and labor	\$1,335 51
2	Repairs on building	3 65
3	Furniture and materials	14 07
4	Special explorations and collections	1,266 78
5	Publications, drawing and engraving	130 82
6	Library: books, subscriptions, and binding	41 68
7	Photographic materials	19 48
8	Caligraph and materials	72 70
9	Postage, express, telephone, telegraph	365 55
10	Fuel and gas	198 25
11	Water tax	25 00
12	Stationery and incidentals	46 30
13	Salaries and extra labor	3,985 50
		<hr/>
		\$7,505 29
	Balance, cash on hand to new account	4,144 46
		<hr/> <hr/>



\$11,649 75

I have examined this account, and find it properly vouched and correctly cast.

HENRY WHEATLAND.

Salem, March 16, 1886.

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of American Archæology and Ethnology : —

GENTLEMEN, — In October next it will be twenty years since the Museum was founded, and twelve years since you placed me in charge of the collections. It is well, as decade after decade rolls by, to review the past, take note of the several periods in the history of the Museum, and compare the specified objects of the founder with the results attained. In the brief review which I offer, it is only within my province to refer to the Museum and the manner in which the requirements of its founder have been met.

In Mr. Peabody's "instrument of trust," he directs that the income of \$45,000 "shall be applied to forming and preserving collections of antiquities and objects relating to the earlier races of the American continent, or such (including such books and works as may form a good working library for the department of science indicated) as shall be requisite for the investigation and illustration of Archæology and Ethnology in general, in main and special reference, however, to the aboriginal American races." In his "letter of gift," Mr. Peabody makes this important request. "That, in view of the gradual obliteration or destruction of the works and remains of the ancient races of this continent, the labor of exploration and collection be commenced at as early a day as practicable; and also that, in the event of the discovery in America of human remains or implements of an earlier geological period than the present, especial attention be given to their study and their comparison with those found in other countries."

Thus there are five specified objects which the Curator of the Museum, acting for you and for this purpose, must keep constantly in mind, and all other undertakings must be secondary or incidental to those specified. No matter what may be the wishes or

opinions of others, he has no right to go beyond the specified objects of the founder of the Museum, unless other funds are also intrusted to you, or to him with your approval, for additional purposes. The objects specified may be expressed as follows: —

1st. The formation of a Museum relating to the archaeology and ethnology of America.

2d. Collections from other parts of the world for comparative study with those from America.

3d. In view of their rapid destruction, early attention is to be given to the exploration of the works and remains of the ancient races of America.

4th. Special attention is directed to the importance of the study of man and his remains found under past geological conditions.

5th. The formation of a working library is authorized.

In his "letter of gift," Mr. Peabody calls attention to "the importance and national character of the proposed department" of the University; and it is not to be questioned, both from written and spoken words, that he intended his foundation to be devoted to the formation of a Museum of American Archaeology and Ethnology upon a broad and liberal basis.

It is thus evident that the Museum must be a depository for objects relating to the purposes for which it was founded, and a place where scientific investigations into the archaeology and ethnology of America can be made under the best available conditions. It is a place for study, not for amusement, nor even principally for public instruction, although it is open for public inspection. Visitors are benefited by what they see in the Museum just so far as they are able to appreciate its objects; but the collections are not, and never should be, arranged as a museum of art. Archaeology and ethnology include art in many of its expressions, but simply as a means, and not as a result. In fact, so broad are now the requirements of anthropology, that in turn astronomy, geology, botany, many subdivisions of zoölogy, particularly that of comparative anatomy, with technology, and the fine arts in their subdivisions of architecture, ornamentation, painting, and sculpture, all have to be called upon in determining the origin, relationship, connections, development, and distribution of the races of man in the past, and, in connection with language, customs, music, myths, legends, and history, are important aids in the classification of living peoples and the study of human development.

The first period in the history of the Museum terminated, after eight years' duration, with the lamentable death of its first Curator, Professor Wyman. At that time the collections forming the nucleus of the Museum were contained in twenty-four cases¹ in an upper room of Boylston Hall, and in drawers and boxes in the work-room. The last entry in the catalogue made by Professor Wyman, in the summer of 1874, was under No. 7899, and the total number of specimens was not far from 13,200.

Up to this time but few special explorations had been made for the Museum, and of these the most important were by Professor Wyman himself, who for successive winters systematically explored shellheaps and burial mounds in Florida, and at various times conducted similar explorations of shellheaps in Maine and Massachusetts, when it was several times my privilege to accompany him. Advantage was taken of opportunities to obtain collections from burial mounds in different places, particularly in Missouri, Kentucky, Tennessee, and Michigan; but while many interesting and important objects were thus secured from the burial mounds, little information was obtained beyond what the objects themselves could give.

It was during this period that the South American collection, which now fills to overflowing one of the large rooms in the present building, was begun by the contributions of the late Professors Agassiz and Hartt, and the important collections of human crania from Peru were received from Professor Agassiz and Mr. Squier. The nucleus of the Mexican collection was formed at this time by the gift of the late General Caleb Cushing, the important Hammond and Thoreau collections from Massachusetts were presented, and the Fast collection from Alaska was purchased.

The other marked events of this period in the formation of the Museum were the securing by purchase, and by the energetic action of the President of your board, of the Rose and Claus collections of stone implements from Denmark, the Clement and Mortillet collections from the Swiss lakes, from the caves of the Dordogne, from the gravels of the Somme, and other parts of Europe; of a series of duplicates from the Christy collection, and of Etruscan vases from Signor Castellani, as gifts. To this period also belongs the important gift of Colonel Theodore Lyman, consisting of the Nico-

¹ These cases are now in use in the upper rooms of the present building, and are only sufficient to hold a portion of the osteological collection.

lucci collection of crania, of stone implements, and other objects, from Italy. The Smithsonian Institution and the Peabody Academy of Science at Salem also gave from their duplicates small collections in exchange. The Massachusetts Historical Society, the Boston Athenæum, the Boston Marine Society, the Boston Society of Natural History, and the Museum of Comparative Zoölogy in Cambridge, made over to the new Museum much important and valuable ethnological and archaeological material obtained from foreign countries.

This first period of the Museum is specially noted for Professor Wyman's personal explorations, with the important publications based upon them, and for his invaluable comparative studies in human osteology, while it is also remarkable for the gathering in of objects from foreign lands. The Museum fortunately was founded in time to make all this possible. Had it not been for the existence of the Museum, Professor Wyman's investigations might not have taken this direction, nor would the ethnological treasures of the several Boston institutions have been brought together, even if saved from destruction; while to-day, owing to the action taken by the Swiss and Danish governments, it would be impossible to obtain such large and representative collections as we possess from these countries.

The second period, based on the natural sequence of events, is of only three years' duration, and covers the period of transition from the old to the new, closing with the removal of the collections to the present building.

Coming into charge of all this varied and important material, much of which was suffering from the need of proper cases for its protection and exhibition, it became a serious matter to care for the collections and find storage for the additions. During the three years, 3,175 entries were made in the catalogue, and 12,300 specimens were received. The marked events during this second period may be cited briefly as follows:—

The reception of an important collection from Peru and Bolivia, presented by Mr. Alexander Agassiz.

The gift of several gold and copper ornaments from the graves of Chiriqui, also from Mr. Agassiz, and the purchase of a small series of gold ornaments from Bogota.

The beginning of the explorations in Southern California, conducted at first jointly with the Smithsonian Institution and after-

wards solely by the Museum, with the help of the late Mr. Paul Schumacher.

The special explorations of mounds on a more extended plan than heretofore, with the assistance of the late Dr. E. B. Andrews in Ohio, of Mr. Lucien Carr in Kentucky and Virginia, and of the Curator in Kentucky.

The explorations of caves in Kentucky by the Curator, in Virginia by Mr. Carr, and in Ohio by Dr. Andrews.

The beginning of collections to illustrate the customs and domestic life of the present Indians, by Dr. Palmer and Mr. Schumacher in Southern California, and among the Utes and Mohaves.

The exploration of old village sites of the Pueblo type in Southern Utah, by Drs. Parry and Palmer.

The discovery of the works of man in the Trenton gravel by Dr. C. C. Abbott, followed by the special exploration of the gravels by Dr. Abbott in behalf of the Museum.

The close association of Dr. Abbott with the work of the Museum began at this time; and although at one time before this he had sent specimens to the Museum, he had in the mean while given his archaeological material to the Peabody Academy of Science at Salem. On my leaving that institution to take the position offered me in this, its Trustees transferred the larger part of the Abbott collection to this Museum. Since then Dr. Abbott has been a devoted worker for the Museum, and the important results which he has attained will be noticed under the next period in the history of the Museum. During this period the Annual Reports were enlarged by the addition of special and illustrated papers giving in detail the results of special explorations by the parties who made them, and by researches upon topics germane to the work which the Museum has in charge.

The third period was begun by taking possession of the present building, paid for from the accumulated income of the building fund. In this the collections have found a home worthy of their character and importance; and in their care and arrangement a natural classification has been attempted, grouping together objects belonging to each people. By this method is brought out the ethnological value of every object in the Museum, so that in the mind of the student each is put into the great mosaic of human history. Thus it is that throughout the arrangement of the Museum the chip of stone and the polished implement are side by side. There is no

forcing into line, no selection of material, in order to illustrate a theory. Every object falls into its place with its own associates, and tells its part of the story of the efforts of man and the results which he has reached at different times and in different places. By this method of arrangement nothing is forced, and misconceptions are impossible. Separate the objects and classify them by their kind, independently of their source, and the result is simply a series of collections illustrating the development of the *arts* of man; and although such collections will find appropriate places in a Museum like this, they should be secondary to the main collection, and be formed of duplicate material. Upon these principles and methods the arrangement of the collections in the present building has been carried on.

Although the collections were thus at last permanently housed, they were not yet safe, and the serious question of cases for their arrangement and exhibition was yet to be considered. Of what avail to gather all these treasures of the past, and these perishable objects illustrating the customs of many nations, if dampness, mould, dust, and insects were to have access to them? The bringing together of a collection is an easy matter compared to its perpetual preservation and proper arrangement, as every curator of a museum has realized. In museums devoted to natural history the loss of specimens has been enormous; but, with the exception of valuable types and some unique objects, such losses can be reckoned at the money value at which fresh specimens of the same kind can be procured. This to a large extent is not the case in ethnological and archæological museums. In these we have to deal with the ever changing and advancing productions of man. An object that may be secured to-day is not to be had to-morrow. Like a painting by an old master, it is, if destroyed, an irreparable loss. We may know of it from description, or even from copies, but the truth-telling original does not exist. So it is with specimens of the past. Their number is limited, and, like all individual works of man, hardly any two of these are alike. They cannot be replaced by money; in some instances others of a similar kind, for a given time, may be secured, but the originals can never be replaced. Hence it is that unusual care is necessary for the protection of objects in such a museum as this; and as a long experience in other museums had convinced me that cases have seldom been constructed in a proper manner, it seemed of the utmost importance that, in this

Museum, everything possible should be done to build cases which should be dust and insect proof, as well as permanent and convenient. The results we have secured in this direction are now well known, and the principles so thoroughly carried out in the construction of our cases have since been adopted by many institutions, which have either sent their architects and builders to examine our cases, or have employed Mr. Wilson to make similar plans, models, or cases. By the use of cherry for the cases, thereby dispensing with paint and varnish, we have secured a wood which takes on a soft rich color simply by rubbing it with oil; and this, with the adoption of a light blue tint for the inside of the cases, has proved so satisfactory, that many visitors have testified to their being able to study the objects in the cases for hours at a time without that fatigue to the eyes which occurs when every specimen in a case stands in the glare of a white background. It is hardly necessary to state that the cupboards used for the storage of specimens which cannot yet be exhibited are made with the same care as the exhibition cases above them. The only objection to the present halls are the cross lights which fall upon some of the wall cases. In the next section of the building these will be avoided.

The third period in the history of the Museum thus opened with many administrative duties to be performed; but, notwithstanding, the development of the Museum has been far more rapid than at any preceding time, and its influence has been more widely felt.

This period has been one of great activity in all directions, but particularly in exploration and research. Experience had shown the necessity of thorough research in the field, if the Museum was to be an exponent of scientific work in American archaeology and ethnology. New methods of exploration were found to be necessary in order to make the collections in the Museum of scientific importance. The day had passed for collecting at random, and systematic work had become a necessity. As already stated, this had been begun in former years, but it was now carried on with broader views and more definite aims; — at first with such means as could be spared from the regular income of the Museum fund; but as it was soon found to be impossible to devote any considerable sum to this purpose, owing to the increased general expenses of the Museum, an appeal was made for aid in the work of exploration, and with the assistance thus obtained the Museum was able, for

a few years, to carry on this most important work with unprecedented results.¹

This period has been, therefore, pre-eminently one of exploration and research; and, although reference to the special explorations have been made in the recent Reports, it is proper in the present connection to refer briefly to the most important. These are: —

The continuation of Dr. Abbott's work in the gravels of the Delaware Valley, already referred to.

The exploration of caves, ancient burial mounds, and cemeteries in Nicaragua and Costa Rica, by Dr. Earl Flint, to whose efforts we are indebted also for the blocks of tufa containing human foot-prints, found sixteen feet below the surface, on the border of Lake Managua.

The exploration of mounds, earthworks, village sites, and burial places in Ohio, with the assistance of Dr. C. L. Metz; of shell-heaps in Maine, with the assistance of Mr. Albert I. Phelps and other gentlemen; of mounds and earthworks in Wisconsin, Illinois, and Missouri, with the assistance of several friends; of the mounds in Arkansas, Missouri, and Kansas, by Mr. Edwin Curtiss; of the stone graves and mounds in Tennessee, with the assistance of Mr. Curtiss; of the burial caves in Coahuila, mounds and ancient pueblos in Utah, Indian village sites in Texas, and among the Indians of Southern California and Mexico, by Dr. Palmer; of ancient burial places, village sites, and soapstone quarries on the Santa Barbara Islands, and among the California Indians, by the late Mr. Paul Schumacher; of mounds in Florida, by Dr. David Mack and Mr. Henry Gillman; of mounds in Dakota, by Dr. H. W. Coe; of researches among the Omahas and Sioux, by Miss Alice C. Fletcher; and the examination of the ancient soapstone quarry in Rhode Island, by the Curator, who also joined Dr. Abbott several times in his work, and was personally engaged in the explorations in Ohio, Tennessee, Illinois, Missouri, Wisconsin, and Maine.

To these special explorations, carried on under the direction of the Curator, should be added work by numerous friends, who, having made explorations of mounds and other ancient works in the country, have sent the results to the Museum, and of a few other persons whose special work became known in time to purchase their results while still intact.

¹ The list of subscribers for this purpose is given on page 400.

Several collections have been purchased, or obtained by refunding the actual outlay on the part of friends, which have added largely to the material received. Among these are the Wells collection, made in Egypt in 1856; the collection of types of pottery and various objects from Japan, obtained by the aid of Professor Morse; a portion of the Brantz Mayer collection from Mexico and Peru; the Clogston collection of stone implements and other objects from various parts of the United States; the collection of stone implements from Massachusetts, obtained from Mr. David Dodge and from Mr. G. B. Frazar; and various other lots referred to in the recent Reports.

Gifts have also been received which are in keeping with the additions from other sources, as the annual lists have shown. Of these, special reference should be made to the J. S. Blake collection, obtained in Peru in 1837; the Clarence B. Moore collection, from Europe and Egypt; the W. Sturgis Bigelow collection, from Peru; the Agassiz collections from the Pacific Islands, from Yucatan, New Mexico, and several small lots from other places; the Appleton collection, from Chiriqui; the collection from the Japanese shellheaps, presented by Professor Morse and the University of Tokio; the Kneeland collection, from the Philippines, Sandwich Islands, and New England, containing many human crania; the inscribed stones from Peru, given by the late Mr. E. A. Flint; the Penhallow collection, from the Ainos of Yesso; the Bennett collection, from Delaware; and the Metz collection, from Ohio. With these must be mentioned the large series of Indian portraits, including the originals of Hall and McKenney's work, from the heirs of E. P. Tileston and Amos Hollingsworth; and the collections made in New Mexico and at Cholula by Mr. Bandelier, received from the Archaeological Institute of America.

By purchase have been added the various models of the cliff-houses and pueblos made under the direction of the Hayden Survey, and also a full set of the government photographs of Indians up to a few years ago. As a supplement to the set of photographs, we have also received as gifts numerous others, taken during the surveys under Major Powell and Captain Wheeler; and other large photographs needed to illustrate the ancient architecture of Mexico and India have been bought. This collection has also been largely increased by many gifts from friends, and the same can be stated of the library, which has increased from a few volumes at the

beginning of this period until it now numbers over 800 volumes and 1,100 pamphlets, including nearly all the important current serials and transactions pertaining to the objects of the Museum.

During this period there have been published in the Annual Reports of the Museum numerous papers containing the results of researches, including those by Mr. A. F. Bandelier, Mr. Lucien Carr, Dr. Elmer Reynolds, Dr. C. C. Abbott, Mr. Paul Schumacher, Dr. Edward Palmer, Mr. J. S. Blake, Mr. Lewis H. Morgan, Dr. Emil Schmidt, Mr. Manly Hardy, Major W. T. Walthall, Dr. L. P. Kinnicutt, Miss Alice C. Fletcher, Miss C. A. Studley, and the Curator.

The growth of the Museum has been so marked during this third period that the following statistics of the three periods are worthy of consideration :—

In the first period, of eight years, the entries in the catalogue averaged 987 a year, and the number of specimens averaged 1,650 for each year.

In the second period, of three years, the yearly average was 1,025 entries and 4,101 specimens.

In the third period, of nine years, the annual average was 3,086 entries and 19,499 specimens.

The total number of specimens now catalogued amounts to more than 201,000, under 38,848 entries.

The following causes have contributed to this remarkable growth of the Museum in recent years :—

The marked increase of public interest in all that pertains to the origin and history of man.

The possession of a building devoted solely to the Museum, thus inviting attention to its objects.

The contributions from various sources, made in consequence of the permanence of the Museum and the fire-proof character of the building.

The special explorations conducted by the Museum.

The activity in archaeological and ethnological research which has so rapidly developed during the last quarter of a century in various parts of the Old World has had a marked effect in directing public attention to such studies, and the recent awakening of interest for just treatment of our Indian tribes, and the instructive papers written upon them in the new light which has been shed by scientific research, have done their part in calling public attention to American archaeology.

The fact that in connection with the University there is a building dedicated solely to the preservation, study, and proper exhibition of all material that can be rescued from the past or obtained from the present native tribes of America, is in itself evidence of the importance given to the study of American peoples.

In regard to the present arrangement of the collections, it must be remembered that the halls now in use are far from adequate to exhibit all the collections we have. The object has been to exhibit complete collections so far as possible, and each room and gallery has been devoted to objects from particular regions. The present arrangement, therefore, does not exhibit a continuous history of past and present peoples such as might be shown, particularly of America, had we room for the purpose, but it is rather an attempt to make the best use of our constrained conditions, and an effort to exhibit as completely as possible certain departments of the Museum.

Thus, in the extensive collection from New Jersey, the student can study the stone implements from the Trenton gravel; and in the same room he can find the means of comparing the implements with those of probably about the same geological time, from the modified drift of Minnesota; then he can carry this comparison still further by going to the floor below and examining the implements from the river drift of the Somme and a few other European localities. Or he can compare these earliest remains of man's handiwork from the Trenton gravel with those of the period immediately following, and with the still later works of the Indian tribes that inhabited the same region. Here are the objects from three periods, superposed in time, arranged in sequence side by side, and in such numbers that the cumulative evidence, always asked for by the archaeologist, is amply presented to his consideration. In the same room is placed, for comparison, the extensive and instructive collection from the ancient cemetery and village site in the Little Miami Valley, with the contents of the many "ashpits," those singular excavations associated with the burials of one of the peoples of the valley. Also in the same room are the "surface finds" from Delaware, and from several regions in Massachusetts, such as Cape Cod, the Merrimac and Concord valleys, with a few other small lots from Massachusetts. For further comparison in this room is the collection from the shell-heaps, burial mounds of Florida, and also other objects from that

State. On the gallery above are the collections from the Indian graves of Southern California, and the various objects illustrative of the life and customs of the existing tribes on the Pacific coast, from Mexico to Alaska; while in the adjoining central hall are the articles obtained from the Sioux, Omaha, Ponca, and a few other Western tribes. Of particular interest in these cases are the objects from the Sacred Tent of War of the Omahas, and those used in the last Sun-dance of the Sioux, unique collections of inestimable importance in the history of American tribes.

Entering the southern gallery, the student can examine what we have relating to the inhabitants of Asia, China, Africa, Australia, and many of the Pacific Islands. Then, descending to the room below, he will find the extensive series from South America, relating to both the present and the past. Unfortunately he will not see more than half of our large Peruvian collection, as only a portion of the later accessions can be exhibited for lack of room. The central hall on this floor is devoted to an exhibition of the objects from the Pueblo tribes, both ancient and modern, of New Mexico, Arizona, Colorado, and Utah, together with models of the cliff-houses, and of several pueblos, inhabited or in ruins; also many large photographs of various pueblos.

Descending one flight, to the northern gallery, the student will find an extensive collection, particularly rich in pottery, from burial mounds and graves in Costa Rica and Nicaragua, from caves in Nicaragua, and from various places in Mexico and Yucatan. Here also are large photographs, and a framed set of Catherwood's drawings illustrating the ancient architecture of Southern Mexico. On this gallery, also, are exhibited the collection from the burial caves of Coahuila, and the imprints of human feet in the bed of tufa, found sixteen feet below the surface at Lake Managua. An overflow from this gallery is exhibited across the hall, and consists of a series of pottery and other objects from the graves at Chiriqui, an instructive collection of pottery from Honduras, and small lots from the West Indies and the Bermudas. The rest of the cases in this room are devoted to the several collections from Europe, which are particularly important for comparison with corresponding periods of man's development in America. The most instructive of these are those illustrating the palaeolithic period of Europe, the later stone age of Denmark and Northern Europe, the collections from Italy, from the Swiss lakes, and from the caves of Dordogne.

In the central hall on this floor is arranged the small but instructive Egyptian collection. On the floor below, in the northern room, are arranged the objects from the caves of Kentucky and Tennessee, from the mounds of the Mississippi Valley and eastward, and from the stone graves of Tennessee. Unfortunately, but a meagre portion of our collection from the mounds of Ohio can be exhibited here, and none of those invaluable collections made during the special explorations of the past four years can be displayed until the addition is made to the building.

The osteological collection is now in great part arranged in the upper room and hall, and consists of over two thousand crania and many hundred skeletons or portions of skeletons, mostly from America.

A few human skulls are, however, exhibited in the various collections throughout the Museum, in order to show the cranial type of each people; and as bones with marks of injury and disease are interesting factors in a study of the life and condition of a people, such are in part also shown with associated collections.

It will be noticed that for want of room no general exhibit has yet been made of the many thousand stone implements, and other objects, from various parts of North America, which are classed as surface finds. To exhibit these in a proper manner, at least as much case room as is contained in two of our present halls would be required. Although such an exhibition would unquestionably prove attractive, and add much to the popular interest in the Museum, the information derived from it would be of little importance compared with that from collections obtained at village sites or from burial places, where the association of a large number of objects, particularly when found with human skeletons, gives a scientific value which isolated specimens do not possess, no matter what their individual beauty or perfection may be. A specimen found on the surface may belong to any past epoch, or to any people who have inhabited the region where it was found. Such specimens, however, may be used to advantage in displays illustrating the development of the arts as a whole, and for comparing similar objects from diverse regions.

During the past year progress has been made in all departments of the Museum, and several instructive collections have been added to those on exhibition. The specimens from the ancient pile dwell-

ings of the lakes of Switzerland, Savoy, and Northern Italy have been arranged, and they are so numerous that they add greatly to the means of comparative study of the works of man.

Several small lots, belonging to the early Etruscan period, if not to a different people, have been brought together from ancient village sites in Italy. They are now arranged near the objects from Etruscan tombs, with which they form an instructive series. This completes the arrangement of the several collections from various parts of Europe.

In the last room furnished with cases, on the second floor, to which reference was made in the last Report, several collections have been arranged for special study, as previously mentioned in this Report. That from the ash-pits and ancient cemetery near Madisonville, Ohio, which occupies all the cases on the western side of the room, is of special interest for comparison with that from the lake dwellings of the stone age; and it is impossible to look at the two collections without being impressed by the great similarity of many of the objects from the two places, showing as they do that both peoples were in about the same stage of development.

On the southern side of this room the cases are for the present given up to representative collections of stone implements and ornaments from several sections of Massachusetts, as Cape Cod, and the valleys of the Merrimac, Concord, Ipswich, and Charles.

The cases on the eastern side of the room contain the Bennett collection from Delaware; a portion of the Abbott collection from New Jersey; the Babbitt collection of quartz implements from the modified drift on the Mississippi River in Minnesota; and the objects from burial mounds and cemeteries in Florida, including the Wyman, Mack, and Gilman collections, and a few other lots from that State.

The collections from the shellheaps of Florida have also been arranged in a long table case in this room. The valuable collection made by the late Professor Jeffries Wyman from the shellheaps of the St. John's River have thus been brought together, and the objects from each shellheap, from the upper part of the river to its lower portion, have been assorted and placed in order. Then follow the specimens from the shellheaps of the eastern coast, and afterwards those of Cedar Keys and the adjoining region on the west coast. It will be remembered that Professor Wyman's memoir on the shellheaps of the St. John's was passing through the press at

the time of his death, and that his collection had never been arranged during his lifetime, and only a very small portion of it had been catalogued by him. It is almost needless for me to add, that every effort has been made to identify the exact locality of each object by his original labels and marks, and by the descriptions given in his memoir. Fortunately, this was possible from what I had learned of his work and of the collection during his life.

As now arranged, it is a perfect illustration of his valuable researches on the shellheaps of Florida. In the same case are placed other collections from the shellheaps of the same region, particularly those presented by Mr. Le Barron, from Palatka, and also the series of stone implements from various parts of Florida, but not from shellheaps or from burial mounds. Many of these were obtained by Professor Wyman and his associate, Mr. G. A. Peabody; others were obtained from the sands of Lake Monroe by Mr. Frazar, of which mention was made in a former Report.

At one end of this case are exhibited the human bones found imbedded in the recent sandstone formation on Rock Island in the northern part of Lake Monroe. This deposit was discovered by the late Count Pourtalès, in 1848, and these human remains are those about which so many contradictory accounts have been published.¹ In 1874 Professor Wyman visited this place and obtained other human bones, probably part of the same skeleton discovered by Count Pourtalès.²

The other table case and the wall case on the northern side of this room are devoted to the Abbott collection, of over twenty thousand objects, found upon the farm of Dr. C. C. Abbott and in its immediate vicinity, near Trenton, N. J. Considered as a whole, it forms one of the most instructive collections in the Museum. As soon as the cases in this room were ready, I carried out a long cherished plan of having Dr. Abbott himself arrange this important collection in such a way as to show the successive periods of man's occupation of the Delaware valley, from the time of the deposit of the gravel at Trenton to the occupation of the valley by the recent

¹ See note of Count Pourtalès in *American Naturalist*, Vol. II. p. 443, October, 1868. The original specimens of Count Pourtalès were given to Professor Wyman, and they are probably included among the specimens mentioned above.

² See remarks by Professor Wyman, "Shellheaps of the St. John's River," p. 18, 1874.

Indians. Soon after this collection was arranged, an account of it was given in *Science*, Vol. VII., which is here reproduced.

"The collection of stone implements made at Trenton, N. J., by Dr. C. C. Abbott, now on exhibition in one of the recently opened rooms of the Peabody Museum of Archaeology at Cambridge, is one of the most important ever brought together, and one which archæologists will consult for all time to come. It contains more than twenty thousand stone implements, and several hundred associated objects, made of bone, clay, and copper, with several pipes and numerous ornaments and carved stones.

There are several considerations which give the collection exceptional importance. In the first place, it was brought together from a very limited area by a single archæologist; all the specimens having been found by Dr. Abbott upon his own farm and in its immediate vicinity, with the exception of some of the paleolithic implements, and even these were found within an extreme radius of four miles. Secondly, the gatherings in this limited region have been so long continued and so thorough, that the result is a collection which shows the work of the peoples who inhabited the Delaware valley at different periods in a manner and to an extent never before obtained from any part of this country, and probably not from any other part of the world. Thirdly, the collection is the same which formed the basis of Dr. Abbott's volume on 'Primitive Industry.'

As now arranged, the collection exhibits at one and the same time the sequence of peoples and phases of development in the valley of the Delaware, from paleolithic man, through the intermediate period, to the recent Indians, and the relative numerical proportion of the many forms of their implements, each in its time. It thus forms an exhibition at once instructive to the general visitor, and of great importance to the serious student. It is indeed doubtful whether any similar collection exists from which a student can gather so much information at sight as in this, where the natural pebbles from the gravel begin the series, and the beautifully chipped points of chert, jasper, and quartz terminate it in one direction, and the polished celts and grooved stone axes in the other.

The paleolithic implements from the gravel and from the talus include nearly all found, some of them coming from a depth of thirty feet in the gravel. With one exception, a black flint, they are made of a hard, fine-grained argillite; many are but slightly chipped, while others are of well-defined forms, similar to the paleoliths of the Old World. With these specimens are the human skull, under jaw, and wisdom-tooth, found at different times in the same gravel as the implements.

Following the paleoliths are the several thousand rude and greatly weathered points and flakes of argillite of various forms. The relative importance of the different sorts to the people who used them is shown in an instructive way by grouping and heaping, so that the eye at once takes cognizance of this, while it detects at the same time the individual variations in the different groups. These points belong to the middle period of occupation of the valley; never found in the gravel, they are, as a whole, much older than the surface specimens and those from graves.

To these latter, the work of the recent Delaware Indians, belong the rude scrapers made by simply splitting a pebble, the rudely chipped agricultural

implements of several kinds of stone, and the chipped scrapers, many of which are beautiful illustrations of this kind of work. These, like the arrow-heads, knives, and large spear-like implements shown in an adjoining case, are made from jasper of different colors, as well as from chert and quartz, and are shown in great variety and number. Of the other forms of implements, also illustrated by many varieties of each, are the hammer stones, rubbing and polishing stones, pitted stones, mortars and pestles, celts and axes.

The ornamental stones are of various shapes, some of them simply perforated; the so-called gorgets are in various stages of manufacture, and there are several carvings representing human heads. A few pipes cut out of stone illustrate the Delaware type of tobacco pipe, while numerous fragments of pottery show that they were also made of clay. The potsherds exhibit a considerable variety of ornamentation, principally by incised lines, though many are cord-marked, and others have impressed designs. There are also two spear-heads of hammered native copper, and a little group of miscellaneous objects.

Another group of specimens, not included in the enumeration given above, though by no means an unimportant part of the exhibit, are the chips and refuse material of an Indian workshop. This large mass of material was obtained from a limited area, evidently from where Indians had worked in fashioning various implements. In the mass are thousands of chips of stones of various kinds, broken specimens, failures, hammer stones, and nodules of jasper still unwrought.

The collection is invaluable, unique, and of extreme importance to all who wish to study the stone age of our Atlantic coast. It reflects great credit upon the industry and sharp-sightedness of the collector, and its arrangement exhibits as well the same perspicacity and serious method that is a marked feature of the entire Museum. The problem of the exhibition of archæological objects, so that they may themselves give the most significant and instructive lessons, without reflecting transitory theories, has found an excellent solution at Cambridge."

The arrangement of the osteological collection has continued, and this collection is gradually being brought into order for exhibition when the new cases in the upper hall are ready. In this connection it should be stated that, as each skull is put in place, the principal measurements are taken, so as to arrange it in the proper subdivision of its group. The discovery of a human skull under peculiar conditions in the peat in Northborough in this State has taken Miss Studley from the arrangement of this collection for several months, as it led to an extended study and comparison of other crania in the Museum, in order to determine its race characters. It proves to be that of an Indian, with some interesting peculiarities, but it cannot have been long in the peat. It was found by members of the Worcester Society of Natural History while excavating for mastodon remains found under the same layer of peat, but it is evident that it has no association with the mastodon.

Miss Smith, who for seven years past has proved an invaluable assistant in the Museum, has had charge of the catalogues and the library, and has also filled the position of special assistant and secretary.

Mr. Carr has been engaged upon his historical researches in relation to the Indians, and has ever been ready to give voluntary aid in the Museum work.

Mr. Chick has continued in charge of the Museum building. He has assisted in caring for the collections received, and in many ways has proved an earnest assistant.

During the past year Miss Alice E. Putnam has been regularly employed in numbering the specimens, as this labor became more than Mr. Chick could attend to with his other duties.

Miss Fletcher has continued her studies on the Omahas, and is now engaged in preparing the general sketch of their history and customs, to which I referred in the last Report.

Dr. Abbott and Dr. Metz have devoted much time to voluntary field-work in their respective localities, and have forwarded many specimens to the Museum.

For about a year Mr. W. B. Nickerson has been engaged as a volunteer assistant in field-work for the Museum. In March, 1885, he partly explored a group of burial mounds in the Fox River valley, near Elgin, Illinois, and of this exploration he has prepared an interesting report, accompanied by sketches showing the position of mounds in the valley. Afterwards he was associated with the work in Ohio, and prepared a map of a portion of the Little Miami valley.

Mr. Kimball has, as in former years, given voluntary assistance in various ways, particularly in photographic work. He has accompanied me on many archaeological excursions, during which his skill as an amateur photographer has proved of great service.

Although our means have not allowed of any extensive explorations in Central America during the past year, Dr. Flint has been on the watch to do what he could for the Museum, and has forwarded another block of tufa, from the shore of Lake Managua, containing a human footprint. He has also sent several interesting additions to the collection of pottery from Nicaragua, to which references have been made in previous Reports. It is unfortunate that we are unable at present to take still further advantage of Dr. Flint's valuable services in exploring more of the old burial places

in Central America, where so much could still be obtained of importance to American archaeology.

At a small expense for hired labor, Dr. H. W. Coe, of Mandan, Dakota, acting for the Museum, has thoroughly explored a mound at that place, and has obtained information of interest in relation to its structure and contents. Very little has hitherto been known about the mounds in the Northwest, and, so far as I am aware, this exploration by Dr. Coe is the only one that has been conducted in a proper manner. For a first attempt it is a most creditable piece of work. An account of this exploration will be given in a future Report, with illustrations.

During the meeting of the American Association for the Advancement of Science at Ann Arbor, in August last, Captain W. L. Coffinberry, of Grand Rapids, exhibited a number of objects recently taken from a mound at that place. Among them were two large masses of native silver, a nugget of copper, portions of a pipe with two bowls, a beautiful pipe made of serpentine, together with several ornaments made of hammered silver, and a few bone implements, all of which I was able to secure by paying the commercial value of the silver. As these are the only specimens of masses of native silver which I have seen from a mound, it was important to secure them. In my efforts to obtain for the Museum several other things found in the mound, I have been seconded by Captain Coffinberry and Mr. Wetherby. Unfortunately, however, several persons were present at the time of the accidental discovery of the objects, which at once fell into different hands, and we have not been able to bring all the specimens together. It is greatly to be regretted that a proper spirit of scientific research was not shown at the time; but Captain Coffinberry has done the best he could under the adverse circumstances, and has prepared an account of the discovery, and made a map of the group of mounds to which this one belonged, which will be given in the next Annual Report, with illustrations of all the specimens; we may be able to obtain from this interesting deposit.

It had long been my desire to examine some of the hundreds of mounds which are seen along the bluffs of the Mississippi River, and hence it was with pleasure that, in company with Mr. Kimball, I accepted the invitation of Alfred Stebbins, Esq., of Summer Hill, Pike Co., Illinois, to visit him for an exploring expedition along the bluffs.

In September we established our camp amid a group of ten mounds, on the bluffs belonging to Captain J. G. Adams, in Atlas township. The largest and southernmost of this group had not been disturbed, and this was selected for exploration. This mound was seven feet high, forty-six feet in diameter from north to south, and forty-three feet from east to west. It was situated upon the very edge of a point of the bluff, and of late years, since the timber was cut, it has been considerably washed, so that its height is not quite as great as when it was first erected. More than one half of the mound was carefully examined, section by section, and it was found to be a simple burial mound, composed entirely of the light soil of the bluff. The character of the soil is such that human bones buried in it would probably decay in a few centuries, hence it is probable that this mound and others of the same character along the bluff were made by recent tribes of Indians. The partial remains of eighteen skeletons were found, at irregular intervals, between the northern edge and the centre of the mound. In some instances the bones of the head were better preserved than those of the body; in other cases only portions of the long bones or small fragments of various parts of the skeleton were found. In no case was there anything approaching a well-preserved skeleton; and only one skull, which proved to be dolichocephalic, could be so far restored as to enable us to take its principal measurements. Nearly all the bodies were buried, probably, in slight graves, over which the mound had been erected, and at a later period a few other interments had been made upon its sides. In a few instances, the fragments of bones remaining seemed to indicate burials in a sitting posture, or else secondary interments, but the bones were in every case too fragmentary to enable us to determine this point. In one case on the western side of the mound, the body had evidently been partly surrounded by thirteen stones, large nodules of chert and irregular pieces of limestone, from one to two feet in diameter. At one end of this irregular enclosure, three teeth were found, and four feet eight inches from them, partly under one of the stones, were portions of a femur. Of the rest of the skeleton there was not a trace. Not a single object was found associated with the remains of either of these bodies.

Between thirty and forty small pieces of rude and cord-marked pottery, sixteen flint flakes, one piece of a chipped flint implement, portions of about twenty very much decayed shells of unios, about

thirty broken pieces of animal bones, one of which was burnt, and a piece of decomposed red stone, were found at different levels, from the bottom to near the surface of the mound; but not one was so situated as to indicate that it had been placed with a body at the time of burial. They were probably all mere chance deposits, made during the erection of the mound.

We also made partial examinations of three other mounds of this group, in which holes had been dug, probably by treasure seekers, and we satisfied ourselves that in their general character they were, like the largest of the group, simple burial mounds. In the centre one a large hole had been dug, which reached nearly to the base. This we excavated about a foot deeper, and found portions of a human skeleton, which was not so much decayed as were those in the largest mound, and near it several potsherds, a few flint flakes, and a piece of a chipped stone implement.

In another of the group we found human bones, potsherds, flakes, and two quartz crystals. From another, one of the lowest of the group, we obtained a flint flake and a broken implement, but found no sign of human bones.

It was evident from the condition of the bones that these mounds were not all made at the same time, and it is possible that the largest one is by far the oldest.

In a ploughed field to the northwest of this group, we found many pieces of pottery of the same type as that taken from the mounds, and also small arrow-points made of the white flint of the region, many flint flakes and nodules, and a few hammer stones, all tending to show that the place was a village site, and that, so far as can be determined by the fragments of pottery, it was probably inhabited by the people who made the mounds.

A few miles farther down the river, on bluffs belonging to Mr. Lovell, there is a far more extensive group of mounds of a similar character; but nearly all had been more or less dug into, and fragments of human bones which had been thrown out were lying about on the surface.

One small mound of this group had not been disturbed, and this we thoroughly examined. It was three feet high and twenty-four feet in diameter, and made of the soil of the bluff.

On the northwestern edge of the mound we found bones belonging to three human skeletons. They were much decayed, but it was evident that the bodies had been buried in an extended posi-

tion in graves dug after the mound had been made. One skeleton, with the head to the east, was only two feet from the surface of the mound. At the feet of this were portions of another skeleton, lying at right angles to the first. A few feet west of these bones, and only sixteen inches from the surface, were portions of a third skeleton, lying with the feet to the north and the head to the south. In the central portion of the mound, in a space five feet square and covered by from sixteen to twenty-four inches of earth, was a pile of human bones belonging to at least seven skeletons. These bones were mixed together in such a manner as to leave little doubt as to their having been placed there at one and the same time. There were no other human bones in or under the mound, and it is evident that it was erected over and about this central pile of bones, and that the three skeletons found at the southern edge, which is the portion nearest the edge of the bluff, were the remains of bodies buried afterwards. During the removal of all the earth forming this mound, not a single animal bone, clam shell, or fragment of pottery, was found. Eight flakes of flint were picked up here and there throughout the mound, and one arrow-shaped point, chipped out of flint, was discovered a few inches from the surface, on the western side.

Forty feet west of this mound was a much larger one, which had been dug into in several places. These old excavations showed that many large stones had been placed in the central portion of the mound. We removed several, but found that they had all been pulled over within a few years, and that the earth had recently been disturbed below them. We also made a few excavations for the purpose of ascertaining how far the stones extended, and found that there had evidently been several piles of them, the one in the centre being the largest. A fragment of pottery and portions of four skeletons, which some digger had disturbed, were found.

Farther down the river, in Calhoun County, and along the bluffs of the Illinois River, the mounds were nearly as numerous as on the Mississippi bluffs in Pike County. Mr. McAdams has examined many of them. Unfortunately, there has been no account published of a thorough exploration of a mound in that region, but judging from what I know of the numerous interesting objects found by Mr. McAdams (for some of which he has made an exchange with the Museum), the mounds on the Illinois bluffs were not made

by the same people who built those on the Mississippi bluffs in Pike County. In the latter, few if any objects of an imperishable character were placed with the dead.¹ In the former have been found pottery of an exceptionally fine character; elaborate ornaments of shell, stone, and copper; pearl, shell, and copper beads; and implements made of bone, stone, and copper. From all I can learn of the burial mounds of the Illinois bluffs, they resemble in contents, size, and structure the simple burial mounds of the Ohio valley, while those on the Mississippi bluffs have nothing in common with them except that they are burial mounds.

On the side of a bluff facing the Mississippi in Calhoun County, we discovered in a ploughed field an extensive village site, where we found many potsherds, hammer stones, nodules, flakes, and broken flint implements, and several perfect implements chipped from flint. The potsherds were like those from the Pike County mounds, and it is probable that one tribe, or a group of tribes closely allied, long held this portion of the Mississippi valley.

During our trip of about forty miles down the valley, from Summer Hill, crossing to Hardin, on the Illinois, we found implements chipped from white flint, and obtained others from boys who had picked them up on old village sites. We also saw the white flint in place in several of the ledges. The rarity of grooved stone axes and stone celts was very marked, until we reached the Illinois River, where these implements were common, and where the greater variety of objects made of stone was noticeable, the Ohio valley forms being prevalent. Many of the chipped flints are of forms unlike any I have seen from other regions, and exhibit a remarkable skill on the part of their makers. All such, however, were surface finds, and of course it is impossible to assign them to any particular time or group of people until similar forms are found with human remains.

The explorations in the Little Miami valley in Ohio have been carried on during the year as far as was possible with the very limited amount of money that could be spared for the work; and had it not been for the disinterested labors of Dr. Metz, they would of necessity have been entirely suspended. During the year he has personally superintended the exploration of several small mounds

¹ Our experience was supplemented by inquiries made of residents in the vicinity, who stated that bones were about all that had been found in the mounds, and that some of the mounds were full of them.

and a portion of a large cemetery. The latter has proved of great interest, and from it many thousand specimens have been obtained, and also many skeletons. This cemetery is on the opposite side of the river from the one so often referred to as the ancient cemetery near Madisonville, but it has much in common with it. For the first time the large pipes cut in stone in the form of human figures have been found associated with skeletons. This is an important discovery, as heretofore such pipes have only been known from surface finds, although they have been attributed to the people who made the mounds in the Ohio valley. Now we know that they belonged to a people who buried in regular and large cemeteries, where the bodies were generally placed in extended postures. We also have obtained facts indicating burial ceremonies, which, with the many objects found associated with the human remains, will permit us to draw a fair picture of the arts and customs of this particular people, who need no longer be confounded with those who built the altar mounds, stratified mounds, and large earth-works in the valley. The specimens obtained from these explorations are at the Museum, and fill several hundred drawers; but, as they are not yet entirely its property, they have not been catalogued, and therefore cannot be included in our "additions for the year." Had that been possible, our list of additions would have been about as large as during the preceding year, instead of considerably under it, though as it is it reaches 1,258 entries in the catalogue, and covers more than 5,500 specimens.

It is greatly to be regretted that the Museum is hampered in this most important exploration by the lack of a few thousand dollars. The system of field-work we have inaugurated has already yielded facts of great importance to American archæology, and has demonstrated the value of special explorations carried on in particular regions in a systematic manner. Indeed, the results attained are freely acknowledged by prominent archæologists to be most important contributions to our knowledge of the Ohio valley, and they have shown conclusively that it is only from such work that the information can be derived which will enable students to draw correct and far-reaching deductions. What has been done in this respect has shown what should be done, and that at once. Yet we are unable to go on with this work simply for the want of two or three thousand dollars a year; and this, too, when so many thousands are annually expended for explorations in other countries.

We have in this country the conclusive evidence of the existence of man before the time of the glaciers, and from the primitive conditions of that time he has lived here and developed, through stages which correspond in many particulars to the Homeric age of Greece. Yet how few persons appreciate the importance of a study of pre-historic man in America, in order to understand the things for which explanations have been sought in vain in classic lands! The opportunity is now before us to explore our own country, to ascertain what races have occupied America in the past, to trace their migrations over the whole continent, to ascertain the lines of development of the great nations of Peru and Mexico, to determine the connections of our present Indian tribes with peoples of the past, to trace man back to his origin, and ascertain the way by which America was peopled. These problems are certainly worthy of solution. Will not aid be given this Museum, which was founded for this special object, so that it may go on with its labors, since it has shown that it is capable of performing them?

If a fund sufficient to yield a few thousand dollars a year cannot be obtained, should we not at least endeavor to secure a number of subscriptions which would give that amount annually for the next five years, so that we may proceed with the work before it is too late?

Respectfully submitted,

F. W. PUTNAM,
Curator of the Museum.

CAMBRIDGE, April 9, 1886.

LIST OF ADDITIONS TO THE MUSEUM AND LIBRARY FOR THE
YEAR 1885.

ADDITIONS TO THE MUSEUM.

37591. Cinerary urn from the Pyoo tribe of the Prome district, India. Presented by Mr. D. A. W. SMITH.

37592—37775. Human crania, wooden dish, wooden pick, grass broom, shell fish hooks, fish lines, and sheets and samples of Kappa cloth with the pounders used in making it, from the island of Hawaii. Stone implements including adzes, sinkers, poi pestles, mortar, carved stone hammer, maika stones; wooden dish and bowls, carrying sticks, wooden tobacco pipe, club and portion of a spear; water bottles and other vessels made of calabash-gourds; gourd and cocoanut rattles; vessels and tobacco holders made of cocoanuts; ava dishes, kappa cloth, mats, rope and twine, calabash holders of cord, netting and implements for making it, braided palm leaf, palm leaf pillow, basket, model of a house, musical instruments; necklaces of shells and nuts, and ornaments of seeds, feathers, shells, ivory and human hair, from the island of Oahu. Strings of wooden and shell disks, from the Kingsmill Islands. Stone implements including points, knives, drills, hammers, mortar, metate and grinder, obsidian arrowpoints; wooden ladle, rawhide tobacco pouch, turquoise ornaments, ornaments of shell and glass beads, marine shell, copper vessels, soap-root basket, earthen jars and bowls, some of them with painted decoration, from various pueblos, ruined and inhabited in New Mexico. Mortars and pestles of stone from graves in the Navajo mountains, New Mexico. Water jars of basket work from the Apache tribe. Earthen vessels and potsherds, samples of adobe, bones and bone implement, fragments of metates, grinding and polishing stones, paddle and spindle whorl of wood, and corn stalk and cobs, from Cliff Dwellings in Walnut Canon, Arizona.—Collected and presented by Mr. ALEXANDER AGASSIZ.

37776—37777. Gum stick, and rings and poles for playing a game, from the Omaha tribe.—Collected and presented by Miss ALICE C. FLETCHER.

37778—37791. Human figure and heads of clay, stamp and spindle whorls in pottery, earthen toy pitcher, purse and hair brush of agave fibre, iron finger ring, silver ornament representing a horse, and various symbolic religious objects, from different parts of Mexico.—Collected and presented by Captain NATHAN APPLETON.

37792—37804. Human figure and heads in pottery, and earthen spindle whorl found near the city of Mexico. Amethyst ornament; punice stone, and potsherds from the ruined pueblo of Chapillo. Maize bread from

the pueblo of San Ildefonso. Smoothing stone from the cave dwelling of Pajarito, New Mexico.—Collected and presented by Rev. HORATIO P. LADD.

37805—37908. Stone implements; flint flakes; baskets; corn for ceremonial use; coal and cinder; red pigment; perforated shells; earthen pendant, and many fragments of pottery, from ancient and modern Pueblos in New Mexico.—Collected and presented by Dr. JEREMIAH SULLIVAN.

37909—37911. Beads of shell and stone, and turquoise pendant and beads from a cave in Colorado on the river Colorado Chiquito.—Presented by Captain JOHN G. BOURKE.

37912—37917. Portions of a whistle, of a pipe (?) and of two figures, all in terra cotta; stone beads and handle of an earthen jar, from Tampico, Mexico and vicinity.—Collected and presented by Mr. E. H. WHORE.

37918—37923. Portions of four human skeletons, human hair, and chipped stone point from graves on Watson's hill, Plymouth, Mass.—Collected by Rev. F. N. KNAPP and Messrs. JOHN M. COBB and JOHN CONE KIMBALL and presented by Mr. JOHN M. COBB.

37924—37941. Human cranium, fragment of another and long bones, potsherds and chipped stone implements, from the bank of the Connecticut river in Longmeadow and Agawam, Mass.—Collected and presented by Mr. B. W. LORD.

37942—37943. Cut stone and smoothing stone found beneath the stump of a large tree in Middleboro, Mass.—Presented by Col. THEODORE LYMAN.

37944—37496. Oyster shells; animal bone, and hammerstone, from an ancient shellheap in Cambridge Cemetery.—Collected by Mr. CHARLES S. CHILDS and presented by Dr. S. W. DRIVER.

37947—37948. Potsherds and stone arrow-points from a shellheap in Kingston, Mass.—Collected and presented by Dr. HIRSH H. BURNS.

37949—37952. Rude stone implements found near Mt. Kineo House, Mooshead Lake, Me.—Collected and presented by Mr. P. A. DENNEN.

37953—38035. Portion of the skeleton of a child, bone implements and points, flakes and various implements of stone, carved and chipped stones, piece of copper chain, portion of a large jar and fragments of pottery, animal bones, Unio shells, wood; charcoal, burnt corn-cobs, and samples of burnt earth and stones, from a mound in Mandan, Dakota; a human under jaw from an adjacent mound.—Explorations conducted for the Museum by Dr. HENRY W. COE.

38036—38146. Points of quartz and jasper, and points and other implements of argillite, from a stony field which rests on tertiary gravel and was dry land during the deposition of much of the Trenton gravel, Trenton, N. J. Fragments of clay pipes; stone ornaments, one unfinished, one broken; half of a boat-shaped stone; fragment of a stone-tablet; chipped and split stones and stone implements, including grooved axes, celt, pestles, hammers, rubbing and smoothing stones, knife, scrapers, sinkers, drills and points of quartz, jasper and argillite from Trenton, N. J.—Collected and presented by Dr. C. C. ABBOTT.

38147. Carved piece of slate from Trenton, N. J.—Collected by Mr. J. A. DAHLGREN and presented by Dr. C. C. ABBOTT.

38148. Carved stone from a shellheap in New Haven, Conn.—Collected by Mr. HORACE BURRITT and presented by Dr. C. C. ABBOTT.

38149—38150. Small earthen stamp delineating a human head, and portion of a human figure in terra-cotta, from San Juan de Teotihuacan, Mexico.—Collected and presented by Mrs. ZELIA NUTTALL PINART.

38151. Perforated piece of glass found fifteen feet below the surface in New Berlin, O.—Presented by Mr. J. R. EATON.

38152. Steatite pipe broken in process of manufacture, from near Fort Tejon, Cal.—Collected and presented by Professor JULES MARCOU.

38153. Carving in pynophyllite, one of a large number of fraudulent specimens from North Carolina.—Presented by Mr. JOHN H. GOODALE.

38154. Oyster shells and bone from a shellheap in Cambridge Cemetery.—Collected by Mr. CHARLES S. CHILDS and presented by Dr. S. W. DRIVER.

38155—38163. Chalcedony arrowhead and stone scrapers from various points in Dakota.—Collected and presented by Mr. T. H. LEWIS.

38164—38173. Fragments of human bones and of a deer bone, nodules and flakes of flint, and fragments of pottery, from a small shellheap on the Chesapeake river, near Cambridge, Md.—Collected and presented by Dr. J. T. ROTHROCK.

38174—38183. Imprint of a foot, probably in a sandal, from the tufa, and fossil leaf from the deposit overlying this and the other human foot-prints (33312—33315), on the shore of Lake Managua, Nicaragua. Ornament belonging to a large jar from a burial mound, two small clay images representing women, fragment of a large jar and feet of tripods from various points in the vicinity of Rivas, Nicaragua.—Explorations conducted for the Museum by Dr. EARL FLINT.

38184. Iron implement from China.—Collected by Mr. GEORGE FRAZAR and presented by Mr. GEORGE B. FRAZAR.

38180—38223. Chipped stones, stone flakes, pitted and polished stones and stone implements, consisting of points, hammers, drill, hoe, and broken pestle from different points in Kingston, Watertown, Wal-
tham, Arlington and Medford, Mass.—Collected and presented by Mr. GEORGE B. FRAZAR.

38224. Celt of nephrite from New Zealand.—Presented by HARVARD COLLEGE MINERALOGICAL MUSEUM.

38225. Human cranium with a perforation in the sagittal suture, from a mound on the river Rouge, Mich.—Presented by Dr. BELA HUBBARD.

38226—38232. Fragment of bone implement, broken jasper arrow-point, fragments of worked stone, and knife, flake and scrapers of flint, from a mound near Paint creek, five miles from Lindsborg, Kansas.—Collected and presented by Mr. J. A. UDDEN.

38233—38257. Canine skull and bones, cut animal bone, chipped stones, spherical stone, pieces of wood and bark, from mounds on Fox river, Elgin township, Ill., and samples of the several strata composing them; stones, flint chips, hair, broken animal bones, fragments of an

earthen jar, charcoal and samples of soil, from artificial pits in Elgin, Ill.—Collected and presented by Mr. W. B. NICKERSON.

38258—38289. Chipped stones and flakes, chipped pieces of jasper, quartz and slate, rude chipped implements, sickle-shaped flake of slate, slate implements, hammerstone, drill, point and knife of stone, and fragment of steatite pot, from Arlington, Mass.—Collected and presented by Mr. GEORGE B. FRAZAR.

38290—38300. Fragments of soapstone pots, pieces of soapstone, one of them worked, rude stone implements used in making the pots and pieces of quartz, some of them chipped from an ancient, steatite quarry on Scanell hill, Millbury, Mass.—Collected and presented by Mr. W. B. NICKERSON.

38301—38302. Fraudulent dishes made of soapstone from the quarry at Millbury, Mass.—Presented by Mr. RICHARD O'FLYNN.

38303—38335. Bow with string of sinew, and arrows with barbed wooden points, made by Uruguay Indians; cups made of gourds, and tubes, one made of a gourd and one of silver, used for drinking maté, from Montevideo; Uruguay earthen whistle representing a dog, and palm leaf fire fan from Guayaquil, Ecuador; model of catamaran from Maranhão, and palm leaf fire fan from Rio de Janeiro, Brazil; finger ring and ornament of silver made by the Araucanians; silver crucifix and apostle spoon, ear ornaments and pendant of silver, from Santiago, Chili; silver mounted gourd to hold cocoa leaves and lime for chewing, silver bird, ivory stiletto, necklace of seeds and charms, and another of seeds and feathers, bronze knife, and bronze face in profile, made by the Indians, from Lima, Peru; copper and silver South American coins; carved "sceptre" with stone head, pointed sticks variously ornamented, braided sling, and the eyes of a cuttle-fish, from ancient graves in Peru.—Collected and presented by Capt. NATHAN APPLETON.

38336—38341. Skull with the under jaw and other human bones from an ancient Guanche cemetery on the Island of Grand Canary; gum of the chazon-tree used in embalming, and the sweepings of a Guanche mummy cave on the same island.—Collected and presented by Miss JULIA P. DABNEY.

38342. Natural flakes of stone from Newport mountain, Mt. Desert, Me.—Collected and presented by Mr. LUCIEN CARR.

38343—38344. Chipped stone point and drill from Brookfield, Mass.—Collected and presented by Mr. WILLIAM COOLEY.

38345—38350. Chipped stone points and flakes from Barnstable and Mashpee, Mass.—Collected and presented by Mr. FRANCIS C. LOWELL.

38351—38366. Chipped points of quartz, chipped stones and flakes and chipped stone points, from various parts of the island of Nantucket.—Collected and presented by Mr. D. F. LINCOLN.

38367—38375. Half of a hematite celt from the surface, Anderson township, Ohio; stone chips and chipped stone points from the surface, Newton, Ohio.—Collected and presented by Mr. W. B. NICKERSON.

38376—38377. Chipped stone knife, pebble, and fossil oyster shell from a shellheap on Horse creek, Volusia county, Fla.—Presented by Dr. C. L. METZ.

38378. Stone with two cavities probably natural, from Pine lake, Wis.—Collected and presented by Mr. W. B. HINCKLEY.

38379—38381. Perforated stone tablet, point and knife of stone found near Ann Arbor, Mich.—Collected and presented by Mr. DAVID DEPUE.

38382—38384. Chipped stone point from Black Horn mountain, Colfax county, New Mexico; chipped stone point from Bergen county, N. J.; chipped quartz point from a muck deposit, three miles southeast from Ridgewood, Bergen county, N. J.—Collected and presented by Mr. A. S. FULLER.

38385—38388. Hammerstone, flint chips, potsherds and animal bones, from Indian village sites on the shore of Lake Michigan, Evanston, Ill.—Collected and presented by Messrs. F. W. PUTNAM and JOHN CONE KIMBALL.

38389. Long flint point from Hardin, Calhoun county, Ill.—Collected and presented by Dr. F. L. MARION.

38390. Long flint point from Hardin, Calhoun county, Ill.—Collected and presented by Dr. W. W. PULLIAM.

38391—38393. Discoidal stone, small stone axe, and large flint point from Hardin, Calhoun county, Ill.—Collected and presented by JAMES McNABB.

38394—38400. Broken flint hoe and chipped flint points from the Mississippi bottom, Atlas township, Pike county, Ill.—Collected and presented by Mr. ALVAN S. WARREN.

38400—38409. Stone arrowpoints, oval chipped stone implement, and long flint points from Atlas township, Pike co., Ill.—Collected and presented by Miss INA PETTY.

38410—38419. Chipped perforator and points of flint from Martinsburg township, Pike Co., Ill.—Collected and presented by Messrs. FRANK and G. HERBERT GRABAEI.

38420—38421. Potsherds and worked antler points from a refuse heap on the bluff, Atlas township, Pike co., Ill.—Collected and presented by Mr. ALFRED STEBBINS.

38422—38683. Knives and points of flint, various broken and unfinished flint implements, flint chips and flakes, worked piece of hematite, and potsherds, from a village site on the Mississippi bluff, and grooved stone axe, flint drill and knives and points of flint, from other parts of Calhoun county, Ill.; natural and chipped pieces of flint, flint flakes and implements, including knives of many forms, arrowpoints, drills and oval implements, and potsherds, from the surface, Atlas township, Pike co., Ill.; portions of several human crania, and other portions of several skeletons, potsherds, and flint points and flakes, from mounds on the Mississippi bluff on Mr. Lovell's farm, Atlas township, Pike co., Ill.; portions of crania and bones of several skeletons, fragments of a child's skeleton, leg bones of a deer, fragments of *Unio* shells, burnt bones, potsherds, quartz crystals, flint flakes and broken implements, from a group of mounds on the

Mississippi bluff on land of Capt. J. G. Adams, Atlas township, Pike co., Ill.; flint flakes, potsherds, and seeds from a mound on the Mississippi bottom, Atlas township, Pike co., Ill.—Exploration conducted for the Museum by Messrs. F. W. PUTNAM, JOHN CONE KIMBALL and EBEN PUTNAM.

38684. War-club with a grooved stone head and raw-hide handle, from the Sioux Indians.—Presented by Mrs. ERMINNIE A. SMITH.

38685—38808. Bird, fish and mammal bones, some split and broken; cut pieces of bone and antler, cut beaver's teeth, chipped stones, chipped stone points and scrapers, charcoal, shells, and potsherds, from a shellheap on Keene's Neck, Muscongus Sound, Bremen, Me. Cut pieces of antler, bone points, stone arrow-points, potsherds, shells, and split and broken animal bones, from a clam shellheap on Fort Island, Damariscotta river, Me. Animal bones, shells, charcoal, potsherds, points of bone and stone, worked bones, clay pipe stems of European manufacture, and a fragment of bottle glass, from a shellheap on Hog Island, Bremen, Me. Animal bones, charcoal, shells (*Ostrea*, *Mya*, *Venus*, *Natica*) potsherds, stone chips and flakes, and bone points and needle, from shellheaps at Damariscotta, Me. Oyster, quahaug and *Helix* shells, animal bones, stone flakes and chipped implements and potsherds, from shellheaps at Newcastle, Me.—Explorations conducted for the Museum by Miss C. A. STUDLEY with the assistance of Miss MARGARETTE W. BROOKS, Miss EDITH B. MORSE, Mr. A. I. PHELPS, and Mr. JAMES E. KNOWLTON.

38809—38831. Fragments of a human femur, tooth of a moose, potsherds and chipped stone points and scrapers, from a clam shellheap on Long Island, Friendship, Me. Potsherds from a shellheap in Newcastle, Me. Bone points, some with barbs, cut tooth of a beaver, and tooth of a moose, from a clam shellheap in Cushing, Me. Chipped stone point from the east side of Damariscotta Bay, Maine.—Collected and presented by Mr. JAMES E. KNOWLTON.

38832—38840. Portions of human skeleton, perforated bone implements, cut bears' teeth, figure of a beetle carved from antler, portion of an animal-shaped double pipe of steatite, pipe of serpentine, nuggets of native copper and silver, and silver bands for ornaments, from a mound in Grand Rapids, Mich.—Collected by Capt. W. L. COFFINBERRY and the workmen of Mr. F. H. WEATHERBY and others, and obtained by presentation from Capt. W. L. COFFINBERRY, Mr. JOHN T. STRAHAN and Mr. F. H. WEATHERBY, and by purchase.

ADDITIONS TO THE LIBRARY.

Dr. A. Agassiz, Cambridge, Mass. Report and one number Bulletin of Museum of Comparative Zoology.

Dr. Richard Andree, Leipzig, Germany. Two pamphlets.

Miss Franc E. Babbitt, Little Falls, Minn. Pamphlet.

Dr. J. J. Bachofen, Basel, Switzerland. One volume.

Prof. V. Ball, Dublin, Ireland. Two pamphlets.

Dr. G. Barroeta, San Luis Potosi, Mexico. Pamphlet.

- M. le Baron de Baye*, Baye, Marne, France. Two pamphlets.
Berlin, Germany, Königlichen Museum. Three pamphlets.
Mr. W. W. Blake, Mexico, Mexico. Pamphlet.
M. le Prince Roland Bonaparte, Paris, France. Pamphlet.
Boston, Mass., Archæological Institute of America. Report.
Boston, Mass., Museum of Fine Arts. Report.
Dr. A. Brezina, Wien, Austria. Pamphlet.
Daniel G. Brinton, M.D., Philadelphia, Pa. Two volumes, eight pamphlets.
- Brooklyn, N. Y.*, Brooklyn Library. Report.
Brookville, Ind., Brookville Society Natural History. Bulletin.
Mr. D. B. Brunner, Reading, Penn. One volume.
Brussels, Belgium, Société d'Anthropologie de Bruxelles. Bulletin.
Mr. A. W. Butler, Brookville, Ind. Pamphlet.
Cambridge, England, Cambridge Antiquarian Society. Pamphlets.
Cambridge, Mass., Harvard College Library. Three numbers Bulletin.
M. Emile Cartailhac, Toulouse, France. Twelve numbers *Materiaux pour l'histoire primitive et naturelle de l'homme*.
Col. Theo. S. Case, Kansas City, Mo. Seven numbers *Kansas City Review*.
Cincinnati, Ohio, Cincinnati Museum, Association. Report.
Cincinnati, Ohio, Cincinnati Society Natural History. Four numbers *Journal*.
Cleveland, Ohio, Western Reserve Historical Society. Six numbers *Tracts*.
Mr. John Collett, Indianapolis, Ind. One volume.
Mr. G. S. Conover, Geneva, N. Y. Two pamphlets.
Constantine, Algeria, Société Archéologique du département de Constantine. One volume *Recueil des notices et mémoires*.
Prof. G. H. Cook, New Brunswick, N. J. Atlas.
Brig. Gen. George Crook, Fort Bowie, Arizona. Pamphlet.
Dr. J. Daniell, Florence, Italy. Pamphlet.
Danvers, Mass., Peabody Institute. Report.
Davenport, Iowa, Davenport Academy Natural Sciences. Pamphlet.
Denver, Colorado, Colorado Scientific Society. One volume *Proceedings*.
Des Moines, Iowa, Des Moines Academy of Science. One number *Bulletin*.
Rev. J. Owen Dorsey, Washington, D. C. One volume, one pamphlet.
Mr. A. E. Douglass, New York, N. Y. Pamphlet.
Dumfries, Scotland, Dumfriesshire and Galloway Scientific Natural History and Antiquarian Society. One number *Transactions*.
Mr. Arthur Feddersen, Copenhagen, Denmark. Pamphlet.
Miss A. C. Fletcher, Cambridge, Mass. Ten pamphlets.
Florence, Italy, Societa Italiana di Antropologia, etnologia e Psicologia comparata. Three numbers *Archivio*.
Prof. W. H. Flower, London, England. Pamphlet.
J. G. Garson, M. D., London, Eng. Two pamphlets.
Dr. A. S. Gatschet, Washington, D. C. Two pamphlets.

- Dr. Asa Gray*, Cambridge, Mass. One volume.
- Dr. S. A. Green*, Boston, Mass. One volume.
- Mr. R. P. Greg*, Coles, Buntingford, Eng. Pamphlet.
- Dr. Horatio Hale*, Clinton, Ontario, Canada. Two pamphlets.
- Dr. E. T. Hamy*, Paris, France. One volume.
- Mr. H. W. Henshaw*, Washington, D. C. Pamphlet.
- Mr. H. A. Homes*, Albany, N. Y. Pamphlet.
- Königsberg, Prussia*, Alterthümgesellschaft Prussia. Report, one pamphlet.
- Leipzig, Germany*, Museum für Völkerkunde in Leipzig. Report.
- Prof. H. Carvill Lewis*, Germantown, Pa. Two pamphlets.
- Mr. T. H. Lewis*, Harrisburg, Ark. Pamphlet.
- Liverpool, England*, Literary and Philosophical Society of Liverpool. One number Proceedings.
- London, England*, Anthropological Institute of Great Britain and Ireland. Four numbers Journal.
- Miss Annie Loomis*, Keytesville, Mo. Six pamphlets.
- Lyons, France*, Société d' Anthropologie de Lyon. Two volumes Bulletin.
- Rev. J. P. MacLean*, Hamilton, O. Two pamphlets.
- Madison, Wis.*, Natural History Society. One number Proceedings.
- Prof. O. T. Mason*, Washington, D. C. Fifteen pamphlets.
- Prof. A. C. Merriam*, New York, N. Y. Pamphlet.
- Dr. Meyer*, Dresden, Germany. Pamphlet.
- Milwaukee, Wis.*, Public Museum. Report.
- Minneapolis, Minn.*, Geological and Natural History Survey. Three Reports.
- Munich, Germany*, Münchener Gesellschaft für Anthropologie, Ethnologie und Urgeschichte. Three numbers Contributions.
- M. le Marquis de Nadaillac*, Paris, France. Four pamphlets.
- Dr. L. Netto*, Rio Janeiro, Brazil. Pamphlet.
- Newcastle-upon-Tyne, England*, Society of Antiquaries. One volume, one pamphlet.
- New York, N. Y.*, Academy of Sciences. One volume, and two numbers Transactions.
- New York, N. Y.*, American Geographical Society. Bulletin.
- New York, N. Y.*, American Museum of Natural History. Report, one number Bulletin.
- New York, N. Y.*, Metropolitan Museum of Art. Report.
- Ottawa, Canada*, Geological and Natural History Survey of Canada. Report, one volume.
- Paris, France*, Société d' Anthropologie de Paris. Five parts Bulletin.
- Paris, France*, Société de Géographie. Four numbers Bulletin, sixteen pamphlets.
- Prof. G. H. Perkins*, Burlington, Vt. Pamphlet.
- Philadelphia, Pa.*, American Philosophical Society. One number Proceedings.

Philadelphia, Pa., Library Company of Philadelphia. Two numbers Bulletin.

Philadelphia, Pa., Numismatic and Antiquarian Society. Report.

Prof. L. Pigorini, Rome, Italy. Pamphlet.

Providence, R. I., Public Library. Report.

Mr. F. W. Putnam, Cambridge, Mass. Eight pamphlets.

Riga, Russia, Gesellschaft für Geschichte und Alterthumskunde der Ostseeprovinzen Russlands. Three Reports, two volumes.

St. John, New Brunswick, Natural History Society. One number Bulletin.

St. Louis, Mo., Missouri Historical Society. One number Publications.

St. Paul, Minn., Minnesota Historical Society. One volume Collections.

Salem, Mass., Essex Institute. Three numbers Bulletin.

Salem, Mass., Peabody Academy of Science. One volume Reports.

Mr. Stephen Salisbury, Worcester, Mass. One volume.

San Francisco, Cal., California Academy of Science. Two numbers Bulletin.

Dr. Emil Schmidt, Leipzig, Germany. Pamphlet.

Mr. S. H. Scudder, Cambridge, Mass. Seven volumes, fifteen pamphlets.

Prof. G. Sergi, Bologna, Italy. Pamphlet.

Mr. W. Hudson Stephens, Lowville, N. Y. One volume.

Stettin, Germany, Gesellschaft für Pommersche Geschichte und Alterthumskunde. One volume Baltische Studien.

Mr. H. H. Straight, Oswego, N. Y. Pamphlet.

Mr. Cyrus Thomas, Washington, D. C. Two pamphlets.

Mr. E. F. Im Thum, Georgetown, British Guiana. Three pamphlets.

Dr. Paul Topinard, Paris, France. One volume, three pamphlets.

Toronto, Canada, Canadian Institute. Two parts Proceedings.

Washington, D. C., Anthropological Society. One volume Transactions.

Washington, D. C., Bureau of Ethnology. One volume Contributions.

Washington, D. C., Chief Signal Office. One volume.

Washington, D. C., Smithsonian Institution. Three volumes Contributions, Report.

Washington, D. C., U. S. Geological Survey. Thirteen numbers Bulletin, two reports, six volumes.

Wilkes Barre, Pa., Wyoming Historical and Geological Society. One volume Proceedings.

Prof. N. H. Winchell, Minneapolis, Minn. One volume.

Hon. Robert C. Winthrop, Boston, Mass. Four volumes, eight pamphlets.

Mr. T. H. Wise, Wheaton, Ill. Five pamphlets.

Worcester, Mass., American Antiquarian Society. Three parts Proceedings.

Worcester, Mass., Society of Antiquity. Three volumes Proceedings.

Mr. Bryce Wright, London, England. Pamphlet.

- By purchase.* American Antiquarian for 1885.
 “ “ Revue d' Anthropologie for 1885.
 “ “ Science for 1885.
 “ “ Two volumes.

Photographs.

- Capt. Nathan Appleton*, Boston, Mass. Eleven photographs.
Dr. J. S. Billings, Washington, D. C. Twenty-two photographs.
Mr. A. R. Burton, Littleton, N. H. Photograph.
Mr. Lucien Carr, Boston, Mass. Photograph.
Gen. J. S. Clark, Auburn, N. Y. Photograph.
Mr. Robert Clarke, Cincinnati, Ohio. Photograph.
Mr. T. A. Dickinson, Worcester, Mass. Photograph.
Mr. A. E. Douglass, New York, N. Y. Four photographs.
Mr. David Dupue, Ann Arbor, Mich. Three photographs.
Mr. E. W. Ellsworth, East Windsor Hill, Conn. Photograph.
Miss A. C. Fletcher, Cambridge, Mass. Photograph.
Mr. S. H. Scudder, Cambridge, Mass. Two photographs.
Mr. J. A. Udden, Lindsborg, Kan. Two photographs.
Mr. P. M. Van Epps, Glenville, N. Y. Photograph.
Mr. B. F. Waller, New Palestine, Mo. Photograph.
Dr. C. E. Ware, Boston, Mass. Two photographs.
Dr. L. G. Yates, Santa Barbara, Cal. Two photographs.
By purchase. Eighteen photographs.

TWENTIETH ANNUAL REPORT
OF THE TRUSTEES
OF THE
PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY.

PRESENTED TO THE PRESIDENT AND FELLOWS OF
HARVARD COLLEGE, APRIL, 1887.

VOL. III. No. 7.

CAMBRIDGE:
PRINTED BY ORDER OF THE TRUSTEES.
1887.

PRINTED AT THE SALEM PRESS,
SALEM, MASS.

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PEABODY MUSEUM
OF
AMERICAN ARCHÆOLOGY AND ETHNOLOGY
IN CONNECTION WITH
HARVARD UNIVERSITY.
FOUNDED BY GEORGE PEABODY, OCTOBER 8, 1866.

TRUSTEES.

- ROBERT C. WINTHROP, Boston, 1866. *Chairman.*
 CHARLES FRANCIS ADAMS, Quincy, 1866; *resigned*, 1881; *deceased*, 1886.
 FRANCIS PEABODY, Salem, 1866; *deceased*, 1867.
 STEPHEN SALISBURY, Worcester, 1866; *deceased*, 1884. *Treasurer*, 1866-81.
 ASA GRAY, Cambridge, 1866. *Pro tempore Curator of the Museum*, 1874.
 JEFFRIES WYMAN, Cambridge, 1866; *deceased*, 1874. *Curator of the Museum*, 1866-1874.
 GEORGE PEABODY RUSSELL, Salem, 1866; *resigned*, 1876. *Secretary*, 1866-73.
 HENRY WHEATLAND, Salem, 1867. Successor to Francis Peabody, as President of the Essex Institute. *Secretary*, 1873.
 THOMAS T. BOUVÉ, Boston, 1874-1880. Successor to Jeffries Wyman, as President of the Boston Society of Natural History.
 THEODORE LYMAN, Brookline, 1876. Successor to George Peabody Russell, by election. *Treasurer*, 1881-1882.
 SAMUEL H. SCUDDER, Cambridge, 1880. Successor to Thomas T. Bouvé, as President of the Boston Society of Natural History.
 JOHN C. PHILLIPS, Boston, 1881; *deceased*, 1885. Successor to Charles Francis Adams, by election. *Treasurer*, 1882-1885.
 GEORGE F. HOAR, Worcester, 1884. Successor to Stephen Salisbury, as President of the American Antiquarian Society.
 FRANCIS C. LOWELL, Boston, 1885. Successor to John C. Phillips, by election. *Treasurer*, 1885.

OFFICERS OF THE MUSEUM AND SPECIAL ASSISTANTS.

- FREDERICK WARD PUTNAM, *Curator*, 1875. *Peabody Professor of American Archaeology and Ethnology*, 1886.
 LUCIEN CARR, *Assistant*, 1875; *Assistant Curator*, 1877.
 CHARLES C. ABBOTT, Trenton, N. J., *Assistant in the Field*, 1875.
 MISS JENNIE SMITH, *Assistant in the Museum*, 1878.
 EDWARD E. CHICK, *Assistant in charge of the Building*, 1878.
 EARL FLINT, Rivas, Nicaragua, *Assistant in the Field*, 1879.
 CHARLES L. METZ, Madisonville, Ohio, *Assistant in the Field*, 1880.
 MISS ALICE C. FLETCHER, *Special Assistant Department of Ethnology*, 1882.
 JOHN CONE KIMBALL, *Student-assistant*, 1883.
 MRS. ZELIA NUTTALL, *Special Assistant in Mexican Archæology*, 1886.
 MISS ALICE E. PUTNAM, *Assistant in the Museum*, 1886.

TWENTIETH ANNUAL REPORT.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

THE Trustees of the Peabody Museum of American Archaeology and Ethnology herewith respectfully communicate to the President and Fellows of Harvard College, as their Twentieth Annual Report, the Reports of their Curator and Treasurer presented at the Annual Meeting, March 22, 1887.

ROBERT C. WINTHROP,
ASA GRAY,
HENRY WHEATLAND,
THEODORE LYMAN,
SAMUEL H. SCUDDER,
GEORGE F. HOAR,
FRANCIS C. LOWELL.

CAMBRIDGE, MASS.,
April 25, 1887.

(517)

ABSTRACT FROM THE RECORDS.

SATURDAY, NOV. 27, 1886. A Special Meeting of the Board of Trustees was held this day in Boston, at the house of the President, at 3 P. M. Present, Messrs. WINTHROP, GRAY, WHITLAND, LYMAN and SCUDDER.

The Hon. ROBERT C. WINTHROP, President of the Board, opened the meeting with the following statement:

At the Annual Meeting of our Board, on the ninth of April last, I presented an exact and detailed statement of all that had occurred in regard to the nomination of Mr. PUTNAM as Professor as made by us on June 22, 1885. That statement will be found on page 469, in the abstract from the Records, prefixed to our last Report to the President and Fellows of Harvard College. It concluded as follows: "The nomination of our Curator to the Professorship,—unanimously made by this Board of Trustees, and accepted and ratified by the President and Fellows,—has not yet been acted on, either favorably or adversely, by the Overseers. . . .

There seems nothing for us to do but wait and hope. . . . We can only trust that before we meet at Cambridge in June next, to visit the Museum, we may be authorized to greet our Curator as a Professor."

A printed copy of this statement was sent without delay to the President and Fellows, and to most, if not all, of the Overseers, and it was intended then to give distinct expression to our understanding that nothing remained to be done by this Board, and that, while we adhered unanimously to our nomination, we could only wait and hope for the favorable action of others.

It seems, however, that a different opinion exists in some quarters; and that in order to obtain any early solution of this long vexed question, the subject must be taken up *de novo* by this Board and a nomination made as if nothing had occurred.

We cannot hesitate to yield any opinions of our own if we can only accomplish the end which we so much desire; and this meeting has therefore been called to act upon the nomination of a Peabody Professor of American Archæology and Ethnology.

Professor GRAY offered the following votes, which were seconded by Col. LYMAN and unanimously adopted by the Board.

Voted: That the Trustees of the Peabody Museum of American Archaeology and Ethnology hereby nominate F. W. PUTNAM to the President and Fellows of Harvard College to be by them appointed, if they see fit, Peabody Professor of American Archaeology and Ethnology.

Voted: That the Trustees, in renewing this nomination, wish to express their increased confidence in the fitness of their nominee for this position, being confirmed in their choice by the unasked-for and very favorable opinions expressed by scientific men most competent to judge, in recognition of his eminence as an archaeologist, and of his talents for organization and research. The Secretary of the Smithsonian Institution, in particular, declares that he has adopted from Mr. Putnam the ideas and plans upon which our Museum is arranged and that he proposes to reorganize the vast national collections at Washington accordingly.

On motion of Prof. GRAY it was *Voted:* That the Trustees strongly recommend the Curator to complete the account of the exploration of the Turner group of mounds, in a memoir to be published in the next report of the Museum.

Adjourned.

HENRY WHEATLAND,
Secretary.

TUESDAY, March 22, 1887. The Annual Meeting of the Board of Trustees was held this day at 12.30 o'clock, at the house of the President in Boston. Present, Messrs. WINTHROP, GRAY, LYMAN, SCUDDER, LOWELL, and the CURATOR.

In the absence of Dr. WHEATLAND, Mr. SCUDDER was elected Secretary *pro tempore*.

A letter from Senator HOAR, regretting his inability to be present, was read by Mr. Winthrop.

The Hon. ROBERT C. WINTHROP, President of the Board, made the following statement:

We have the satisfaction to-day, Gentlemen, of welcoming our worthy Curator, for the first time, as "the Peabody Professor of American Archaeology and Ethnology at Harvard University." We gladly forget all the delays and misunderstandings of the past. It is enough that there can be no more of them, and that the result which we all so earnestly desired has at length been accomplished. That result was due to the devoted services of Mr. Putnam for so many years, and we may well congratulate him on having obtained the position which he so richly deserved. But it was due also, to the memory of our Founder, who expressly provided for a Professorship as one of the conditions of his Trust. For myself, I have always thought that the Professorship was rightfully established when the endowment was accepted by the College, and that it should bear date accordingly.

And now, Gentlemen, it is for us to consider what more remains for us to do in the execution of the Trust committed to us.

Mr. Peabody, by his Instrument of Donation, dated 8 October, 1886, placed the sum of \$150,000 in the hands of his Trustees with three special provisions as to the use of the money :

1. Forty-five Thousand Dollars were to be held for the formation and preservation of Archaeological and Ethnological Collections, and the income expended for those purposes. "Forming and preserving" are the terms of this provision, and they clearly include the care as well as the purchase of collections. The income of this Fund has been regularly appropriated to its designated purposes, and no change can ever be made or desired in regard to this first provision of our Trust.

2. Another sum of Forty-five Thousand Dollars was to be applied to the maintenance of a professorship, but until this professorship should be filled the income from the Fund was to be devoted to the care and increase of the collections. The Professorship having now been filled, Mr. Putnam is entitled to the whole income of this fund. By the terms of Mr. Peabody's Instrument, he is still "to have charge of the Collections," and, also, "to deliver one or more Courses of Lectures annually, under the direction of the Government of the University." In this last respect, our Curator has passed from our control to that of the University Government. He is still our Curator, as having charge of the Collections, but his Lectures are to be arranged and directed by the Government of Harvard University.

3. The remaining sum of Sixty Thousand Dollars was to be invested and accumulated as a Building Fund, until it should amount to *at least* \$100,000, when (says the Instrument) "it may be employed in the erection of a suitable fire-proof Museum, upon land to be given for that purpose, free of cost or rental, by the President and Fellows of Harvard College, the building, when completed, to become the property of the College, for the uses of this Trust, and none other."

This is the provision which calls for our particular consideration. Having waited until the accumulation reached the amount specified by Mr. Peabody, we have erected a fire-proof Museum on land given for that purpose by the President and Fellows. But, in doing so, we expended less than half of the accumulated Building Fund, and by the last Report of our Treasurer it appears that a little more than \$60,000, the original Building Fund, remains in our hands unexpended. Meantime our Collections are already crowded, and it is plain that the Museum must be enlarged, sooner or later, to meet the present and future needs of the Institution.

Mr. Peabody's provision clearly indicates that he intended an expenditure of "at least a hundred thousand dollars" (those are his words) on the Building. It was clearly contemplated by the Trustees, when the present Building was erected, that it was to be enlarged at a later day. Indeed, the Preface to the second volume of our Reports speaks of the present Building as only a fifth part of what is proposed. It seems to me due to Mr. Peabody that the Building should be commensurate with

the fund provided for it, and should thus adequately represent the liberality of our Founder.

Suggestions have been sometimes made that we should reserve a portion of our Building Fund for the purpose of repairs and other contingent expenses. I cannot think there is any justice in such a course. Mr. Peabody provided expressly that the Building when completed should become "the property of the College," for the uses of his Trust. In other words he presents the Museum Building, when erected, to the University, just as other Buildings have been presented from time to time. Now the University is accustomed to take care of its own property, and to provide for such repairs and contingent expenses as its Buildings may involve. No benefactor is expected to provide a reserve fund for repairing the Building which he presents to the College, or for any contingent expenses connected with its occupation and use. In my own opinion all the contingent expenses of our Museum Building, from the time it was opened, ought fairly to have been paid by the College. It is their property, not Mr. Peabody's nor our own.

The relations between our Museum and the College have never yet been defined or recognized. Is it, or is it not, a department of the University? During the earlier years of our Trust, allusions to Mr. Peabody's Institution, as an embryo Department of the University, were made in the President's Annual Reports to the Overseers. For several years past there has been entire silence on the subject, and the Institution has been almost ignored by the College Government. Not even in the Treasurer's Report to this day is the Museum Building mentioned as an item in the aggregate property of the University.

The recognition of the Professorship, and the appointment of the Professor, will, it is hoped and believed, change all this. The Lectures will be under the direction of the President and Fellows, and the Museum Building, with its costly collections, can hardly fail to be included in the Treasurer's Report as property belonging to the College—to be accounted and cared for like other College property.

For one, therefore, I hope that we shall take measures, at no distant day, for at least duplicating our Museum Building, thus enlarging the accommodation for our present and future collections, and, perhaps, providing a suitable Lecture Hall for the Professor.

We might well wish that our Professor's Fund was larger than it is, and that we could provide a more adequate salary for Mr. Putnam and his successors. Some mode of accomplishing that result may possibly occur hereafter. But we can do nothing in this regard in the execution of our obligations as Trustees of Mr. Peabody, as they are defined in his Letter of Trust.

We might wish, too, that our fund for collections could be increased. But I am less concerned on this score.

In the first place we have already secured large collections of the highest interest and value:

In the second place, we shall still have about \$2,000 a year for preserving our collections and purchasing additions :

In the third place, we shall be constantly in the way of receiving voluntary contributions of interesting specimens and relics :

And, lastly, there will be, as there have been thus far, occasional subscriptions and donations to eke out the insufficiency of our own means.

When a large Museum Building shall have been completed and opened, I have no fear that we shall not be able to fill it.

I believe, therefore, that it is for the best interests of the Museum, and that it is the duty of the Trustees, to employ the funds devoted to that object in completing a Building which shall be worthy of the name it bears.

On motion of Mr. LOWELL it was *voted*, that the statement of opinions made by the President be entered upon the records of the Board and printed in the abstract of the records accompanying the twentieth Report of the Trustees.

The Reports of the TREASURER and CURATOR, which had been sent prior to the meeting to each member of the Board, were accepted and ordered to be printed, with the accompanying papers, as the Twentieth Report of the Trustees, and to be presented to the President and Fellows of Harvard College.

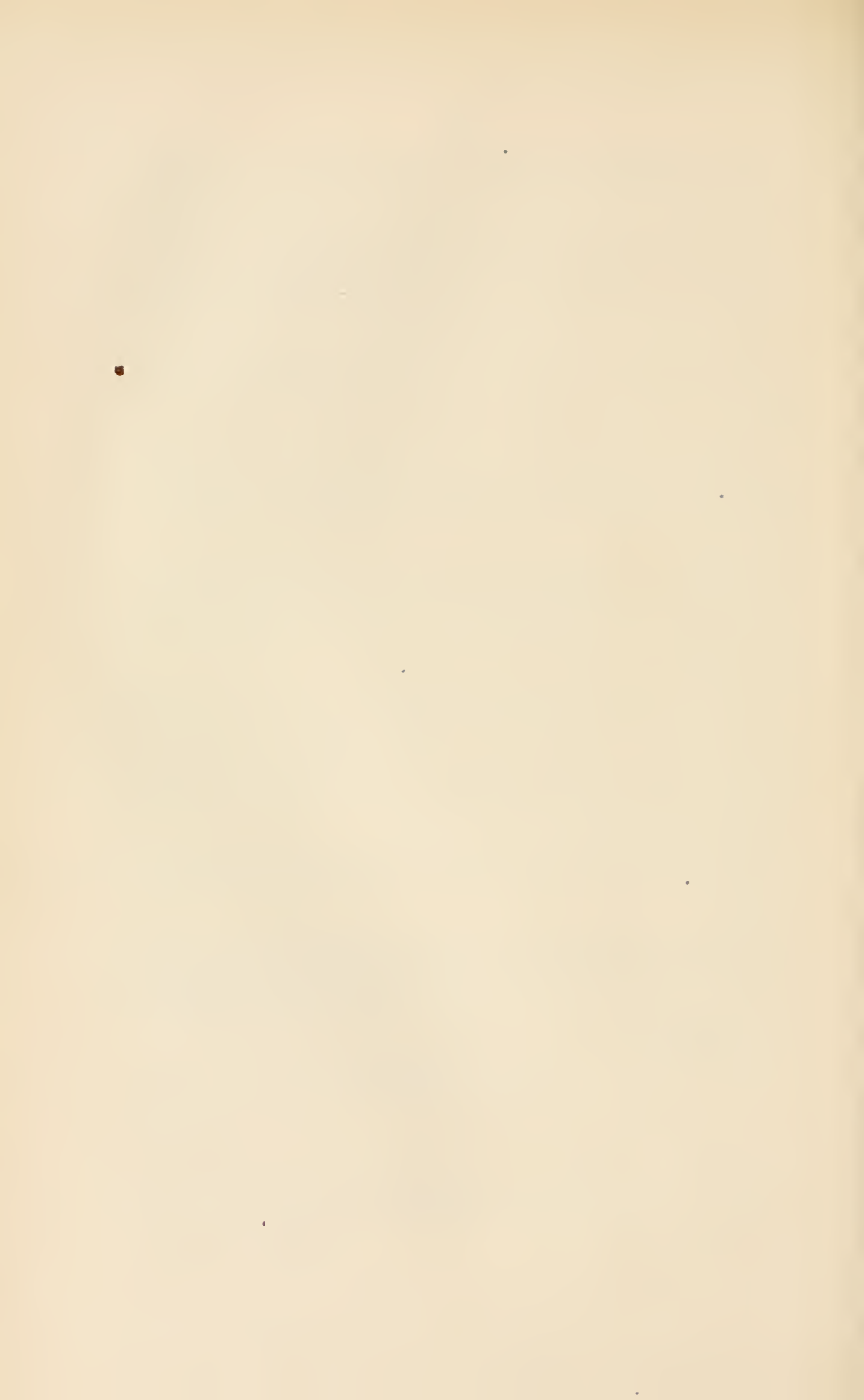
Professor GRAY for the Committee appointed to consider what action should be taken about an addition to the Museum building, reported that the views of the committee were substantially those expressed by the President; they recommended the immediate preparation of plans for another section, and the construction of the same at such future time as would prove advantageous. It was thereupon

Voted, that the CURATOR be charged with the preparation of plans for the extension of the building, to be submitted to the Board at the next meeting.

It was also *Voted*, that the Trustees appreciate the efforts now making to preserve some of the ancient mounds and monuments of the country, and express their readiness to accept any responsibility that may be devolved on them, so far as it may prove compatible with their organization.

Adjourned.

SAMUEL H. SCUDDER,
Secretary pro tempore.



REPORT OF THE TREASURER.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology, in connection with Harvard University.

The TREASURER respectfully presents the following Annual Report:—

Income Account.

1886.

July 1.	Received Int. \$200	United States 4 per cent Bonds, April and July coupons	\$ 4 00
July 1.	" "	\$45,000 Pueblo and Ark. Valley R. R. 7's	1,575 00
Aug. 1.	" "	\$62,000 Chic., Burl. and Quincy R. R. 4's	1,240 00
Aug. 1.	" "	\$54,000 Kansas and Missouri R. R. 5's	1,350 00

1887.

Jan'y 1.	" "	\$200 United States 4 per cent Bonds,	4 00
Jan'y 1.	" "	\$45,000 Pueblo and Ark. Valley R. R. 7's	1,575 00
Feb'y 1.	" "	\$62,000 Chic., Burl. and Quincy R. R. 4's	1,240 00
Feb'y 1.	" "	\$54,000 Kansas and Missouri R. R. 5's	1,350 00
Mar. 1.	" "	On deposit in New England Trust Co. (Building Fund.)	5 75
			\$8,343 75

1886.

July 1.	Paid for Safe in Union Safe Deposit Vaults	\$ 30 00
July 1.	" F. W. Putnam, Curator, on account of Building Fund	849 00
Aug. 1.	" F. W. Putnam, Curator, on account of Professor Fund	1,246 20
Aug. 1.	" F. W. Putnam, Curator, on account of Museum Fund	1,246 20
Aug. 1.	" F. W. Putnam, Curator, on account of Building Fund	97 60

1887.

Jan'y 1.	" F. W. Putnam, Curator, on account of Building Fund	879 00
Feb'y 1.	" F. W. Putnam, Curator, on account of Professor Fund	1,246 20
Feb'y 1.	" F. W. Putnam, Curator, on account of Museum Fund	1,246 20
Feb'y 1.	" F. W. Putnam, Curator, on account of Building Fund	97 60
		6,938 00

On deposit in New England Trust Co.

(Building Fund)	1,405 75
	\$8,343 75

The Building Fund now amounts to	\$61,727 25
" Professor " " " "	45,241 13
" Museum " " " "	45,241 12
	\$152,209 50

FRANCIS C. LOWELL,

Treasurer.

BOSTON, MARCH 22, 1887.

CASH ACCOUNT OF

Dr.

F. W. PUTNAM, *Curator, in Account with Peabody*

1886-87.

Balance on hand from last account	\$1,144 46
Received from Francis C. Lowell, Treasurer	6,908 00
“ “ N. E. Telephone Co.	28 00
“ “ Publications	1 00
“ “ Stephen Salisbury, Esq., subscription	1,000 00
“ “ Mrs. Elizabeth Thompson “	1,000 00
“ “ Geo. W. Hammond, Esq. “	25 00
“ “ Col. T. W. Higginson “	5 00
“ “ Miss Mary L. Ware “	50 00
“ “ A friend “	20 00
“ “ A friend “	100 00
“ “ Hon. Robert C. Winthrop, 3d subscription	100 00
“ “ Hon. Theodore Lyman, 2d “	200 00
“ “ Mrs. Clara B. Kimball, “ “	100 00
“ “ Dr. R. M. Hodges, “ “	25 00
“ “ Dr. C. E. Ware, “ “	100 00
	<u>\$13,806 46</u>

\$13,806 46

I have examined this account with its details, as per cash book,

Cambridge, Feb. 1, 1887.

THE CURATOR.

Museum of American Archaeology and Ethnology.

Cr.

1886-87

Paid as per vouchers numbered.

1	Cases, stock, labor and cartage	\$1,079 63	
2	Repairs on building	32 93	
3	Furniture, stock and materials used	116 65	
4	E. E. Chick, services on building account	500 00	
5	Special explorations and collections	4,685 58	
6	Publications, including 18th and 19th Reports	645 57	
7	Library: books, subscriptions, cards and binding	79 90	
8	Stationery, acknowledgments, labels, etc.	53 03	
9	Photographic materials and printing	42 10	
10	Drawing and engraving	22 57	
11	Special circulars	13 00	
12	Chemicals	7 67	
13	Postage, express, telegraph, telephone	236 67	
14	Paper trays	8 50	
15	Water tax	25 00	
16	Fuel and gas	166 44	
17	Incidentals	95	
18	Salaries and extra labor	3,979 50	
			\$11,738 78
Balance, cash on hand to new account			2,067 68
			<u><u>\$13,806 46</u></u>

and find the same correctly cast and properly vouched.

Salem, March 14, 1887.

HENRY WHEATLAND.

SUBSCRIBERS AIDING IN THE WORK OF THE MUSEUM.

See page 400 for the names of subscribers in the years 1882, 3, 4, and 5,
who have contributed \$5,433 00

1886.

MR. STEPHEN SALISBURY, Worcester, Mass.	. . .	1,000 00
MRS. ELIZABETH THOMPSON, Stamford, Conn.	. . .	1,000 00
COL. T. W. HIGGINSON, Cambridge, Mass.	. . .	5 00
A FRIEND, San Francisco, California	. . .	20 00
MISS MARY L. WARE, Boston, Mass.,	. . .	50 00
MR. GEORGE W. HAMMOND, Boston, Mass.	. . .	25 00
HON. THEODORE LYMAN, Brookline, Mass., 2d subscription,		200 00
MRS. CLARA B. KIMBALL, Boston,	" " " .	100 00
A FRIEND, Cambridge,	" " " .	100 00
MR. H. A. HOMES, Albany, N. Y.	" " .	5 00
DR. R. M. HODGES, Boston, Mass.,	" " .	25 00
DR. C. E. WARE,	" " " " .	100 00
HON. ROBERT C. WINTHROP,	" " 3d subscription .	100 00
		\$2,730 00

Total of subscriptions for 1882-6 . . . \$8,163 00

Additional subscriptions are earnestly solicited for the purpose of continuing the explorations in America.

AN APPEAL FOR AID IN THE EXPLORATIONS.

TO THE HONORABLE ROBERT C. WINTHROP,

Chairman of the Board of Trustees of the Peabody Museum.

DEAR SIR:—In compliance with the request of the Trustees for a brief account of the explorations which have been conducted for the Museum during the past two years, together with a statement of the plans that have been formed for their continuation, I respectfully submit the following for your consideration.

Before the occupation of the new building, there was a small portion of the income of the Peabody Fund which could be used for special explorations. By means of this, the Museum was able to make a beginning in field work; and, small as it was, it not only resulted in the discovery of important facts, but it also secured certain collections which are now on exhibition, and have added greatly to the value of the Museum.

After the removal to our new quarters, the available income of the fund, amounting to \$4,500 a year, was required for the care of the building and the preservation and arrangement of the collections; so that even with the strictest economy there were no means left for the continuation of the explorations. The remarkable results, however, that had hitherto been obtained were such as to make it clear that, if the Museum is to be all that the great advance in anthropological science demands, active and systematic work in the field must be continued; otherwise we shall be left dependent upon chance gatherings, which are often of but little importance.

In this spirit, and with the view of discharging the duty which seemed to fall upon them, the Trustees, in the summer of 1882, made an appeal for aid to the friends of archæological research in America. To this appeal there was a generous response from several gentlemen and

ladies, whose subscriptions have been acknowledged in the annual reports ; and, thanks to their liberality, the sum of \$5,433—all the money that has been given to the Museum since its foundation, twenty years ago—was received. Thus encouraged, active work in the field was resumed, with results which may be briefly stated as follows :—

I. *Explorations in Nicaragua and Costa Rica, through the co-operation of Dr. Earl Flint.* From this source a very interesting collection has been received, and is now on exhibition in the Central American Gallery. It consists of pottery, stone implements, and ornaments of various materials, among which are a number made of jade. This fact is of special importance, for the reason that these articles are identical in their constituent elements with Chinese jade ; and as this mineral has never been found *in situ* in America, it has led to the inference that they were originally derived from Asia. The large number and variety of earthen vessels from the several mounds and graves have proved of great use in the comparative study of the ancient art of America, as have the inscriptions copied from the walls of caves that were long ago used as habitations and as places of burial. Of value, too, in the same field of study, are the objects obtained from the very ancient shell-heaps in Costa Rica ; while the blocks of volcanic tufa containing human footprints, found sixteen (16) feet below the surface of the soil on the border of Lake Managua, are of importance as indicating the antiquity of man in this particular locality. Of course the small sum expended in securing these valuable results would have been of but little avail but for the efficient coöperation of Dr. Flint, who has long been a resident of the country, and who obtained from the Nicaraguan government a special permit authorizing the explorations for the Museum. The opportunity for further work in this region is still open to us if the means for its prosecution can be obtained ; and I feel justified in urging its continuance for the reason that previous discoveries in this region give us good grounds for hoping that future explorations will bring to light facts of the utmost importance in relation to the peoples of North and South America, their relation to each other and to the peoples of Asia.

II. *The continuation of the explorations by Dr. C. C. Abbott in New Jersey*, which have resulted in the discovery of fragments of human skeletons associated with the stone implements in the glacial gravel,—the earliest record of man on the Atlantic coast,—and the confirmation of the theory of the occupation of the Delaware Valley at three successive epochs. A collection of over twenty thousand ob-

jects shows what has been done by Dr. Abbott in the way of field work ; and, besides this, he has published a volume entitled "Primitive Industry," giving the results of his labors, based upon the collection now arranged in the Museum.

III. *The explorations of shell-heaps on the coast of Maine, under my personal supervision.* These have brought to light many interesting facts relating to the early occupation of New England by man, and have shown that while many of these deposits are of considerable antiquity, their formation was continued down to the time of European contact. This collection has been made with special care ; and when there is room for its exhibition, it will be found to be of singular importance in illustrating the life of the ancient people of New England.

In this connection, I must call your attention to the fact that the great shell-heap at Damariscotta, thirty feet high and several hundred feet long, — one of the largest refuse piles on the Atlantic coast, — is now being dug away to be ground up for fertilizing material. An exceptional opportunity is thus afforded for the thorough examination of this great mass of refuse material ; and as such opportunities are rare, it is hoped that this will not be lost. A few hundred dollars a year, for a few years to come, will secure all that this deposit can yield to science. Feeling sure that we could obtain the necessary means for this important object, I have already received from the proprietor the exclusive right to all objects found during the removal of the heap, and have arranged with Mr. Gamage, who was associated with me in my former explorations, to watch the excavation day by day, and secure everything of archæological interest. At the same time, he is to make drawings and photographs as the work goes on. Much of interest has been obtained during the past month ; but unless aid is at once secured we shall have to give up this chance of enriching our collection by the addition of much valuable material at a comparatively little cost.

IV. *The ethnological researches of Miss Alice C. Fletcher among the Omaha and Sioux Indians.* Miss Fletcher's work in this direction is so well known that it is not necessary to dwell upon it here, except to state that the material which has come to the Museum through her energy and perseverance is unique in its character and throws much light upon the customs of the Indians. The contents of the sacred war-tent of the Omahas are a revelation of Indian character ; and these objects, venerated as they were for many generations, through all the vicissitudes of the tribe, and now, by the act of their hereditary custodian, made over to the Museum for perpetual care, are believed

to constitute a collection, which, taken all together, is unique in character and of great ethnological importance. She has also secured for us another collection of singular interest: it being nothing less than the various objects used in the Last Sun Dance of the Sioux. As this ceremony has been prohibited by special act of the General Government, a collection like this could not now be made. What better evidence than that offered by these two collections can be given of the necessity of working with diligence at the present time, before the rapid changes now taking place in our Indian tribes make it impossible to secure the means of understanding their early customs! Miss Fletcher has just started for an extended visit to the northwestern tribes, and it is important that she should be provided with the means for securing other material representations of the vanishing customs of the Indians.

V. *The most extensive of the systematic explorations* in which we have been engaged are those which have been carried on in Ohio with the coöperation of Dr. Charles L. Metz, and to which I have given all the time possible each year since 1881. This work has conclusively shown the necessity of conducting such explorations on a systematic plan and an extensive scale. It has proved the necessity of working thoroughly a circumscribed region, and of not being content with digging here and there, if we are to know all that a certain region can yield of its concealed treasures of the past. During this work we have limited ourselves to the region bounded by the Scioto River on the east, by Paint Creek on the north, the Little Miami on the west, and the Ohio on the south. This well-defined region is in part covered by the glacial gravels and reassorted river deposits; and from the time of the formation of the great glacial moraine, extending to the Ohio Valley, down to the comparatively recent settlement of this region by the whites, it has been an area where the early race of the glacial period has been met by a later and more advanced people, who had here their villages, their burial-places, their altars and their fortifications. Here, tribe meeting tribe, and nation meeting nation, a vast amount of material, showing both early and late occupation, has been left on village sites now buried beneath the soil, placed with the dead in cemeteries and in mounds, or left within the old fortifications. Here we have found extensive burial-places, covering acres in extent, and overgrown with immense trees. Here we have found burial-mounds belonging to different periods, and of several distinct methods of construction. Here we have found elaborately constructed works of a

religious character. Here, too, as offerings during some religious ceremony, we have found the most remarkable objects that have yet been taken from ancient works in the United States, — small carved figures in terra-cotta, representing men and women ; ornaments made of native gold, silver, copper and meteoric iron ; dishes elaborately carved in stone ; ornaments made of stone, shell, mica, and the teeth and bones of animals ; thousands of pearls perforated for ornaments ; and knives made of obsidian ; all showing that the intercourse of the people of that time extended from the copper and silver region of Lake Superior on the north to the home of marine shells in the Gulf of Mexico on the south ; to the mica mines of North Carolina on the east, and the obsidian deposits of the Rocky Mountains on the west.

In this region, too, are some of the most extensive of the ancient earthworks of Ohio : as Fort Ancient, with its walls of earth, from twelve to twenty feet high, enclosing over a hundred acres ; Fort Hill, with its surrounding wall of stone, enclosing about forty acres ; the great Serpent Effigy, more than a thousand feet in length ; the immense earthworks at High Bank, at Cedar Bank, and at Hopeton, with their squares and circles ; while hundreds of mounds, from a foot or two in height to others forty or fifty feet high, are to be seen in all directions. In a few places, what is called the primeval forest still covers the ancient remains ; but by far the larger number are rapidly disappearing under the plough of the farmer and by the growth of towns and cities, which have been, in many instances, established on the very sites of the ancient settlements.

To this region, as I have stated, our most extensive explorations have been confined ; and here it is that, more than in all other places, they should be continued, if the Museum is to advance the important work it has so well begun. The time has passed when the mere haphazard gathering of antiquities was considered the end and aim of the archæologist. That was the work of the curiosity seeker, the pioneer of the student. Now the time has come for thorough work, carefully planned and systematically executed. Archæology has become an acknowledged branch of science, aiming at far-reaching results ; and it is necessary that none but scientific methods should be pursued. For this purpose it is desirable that the Museum should be able to expend in Ohio alone, three thousand dollars a year, before it is too late. With this amount annually, for five years to come, results of the greatest importance could be secured. This is shown by what has already been done. Such systematic work will prove of the utmost importance

in solving the great problems before us in relation to the origin of man, his appearance in America, his migration over the continent, and the contact of race with race.

These are problems in which mankind is deeply interested. The Museum of American Archæology and Ethnology at Cambridge has been founded for this study. Will not aid be given the Museum at this time, now that it has been shown that the work can be performed under its auspices, and that it should be done before the changing conditions render it impossible? In a few years it will be too late. If this aid is to be given, now is the time to ask for it, and with it to carry on the work.

Respectfully yours,

F. W. PUTNAM,

Curator of the Museum.

AUGUST 6, 1886.

The Trustees of the PEABODY MUSEUM OF AMERICAN ARCHÆOLOGY AND ETHNOLOGY are deeply impressed by the foregoing communication from the Curator, and they commend his appeal most earnestly to all who are willing to aid in the interesting and important explorations which he proposes in the cause of science.

ROBERT C. WINTHROP,

ASA GRAY,

HENRY WHEATLAND,

THEODORE LYMAN,

SAMUEL H. SCUDDER,

GEORGE F. HOAR,

FRANCIS C. LOWELL,

Trustees.

REPORT OF THE CURATOR.

To the Trustees of the Peabody Museum of American Archaeology and Ethnology:

GENTLEMEN: The only words with which I can begin this report are those of grateful acknowledgment for your many expressions of appreciation of my efforts in aiding you to carry out the objects of the trust you administer, and to thank you for the cordial support you have given to my plans by nominating me for the professorship of American Archaeology and Ethnology in the University.

In accepting this chair I do not forget that had it not been for the fact that you considered the work I have performed, as curator of the Museum, worthy of your support, the honor would not have been conferred upon me. This appreciation on your part is my great reward for labors which I know I have conscientiously performed, and I am deeply grateful to you, gentlemen, for this acknowledgment. It gives me renewed strength and courage for the performance of future duties.

The position of Peabody Professor of American Archaeology and Ethnology, while imposing no duties which, as curator of the Museum, I have not already performed, brings the Museum more closely into the general system of the University and probably will make necessary some definition of the relationship existing between them.

Under the founder's Instrument of Trust, the Peabody Professor is made the Curator of the Museum, and he is to give "one or more courses of lectures annually under the direction of the Government of the University." These are his specified duties, and with a large museum to look after, with very insufficient funds for its support, they are all that could in justice be expected of any man. Still the Museum ought to be used to its full extent for the purposes of instruction, though such instruction should be limited to advanced students, or to those who wish to prepare themselves for

research in some of the many departments embraced under the terms of archæology and ethnology. For all such students provision should be made. They are wanted, and there is plenty of work for them to perform; and it will be my pleasure to give to such students any facilities that can be properly offered at the Museum.

That trained assistants in the various departments of the Museum are needed is, of course, evident to all from the magnitude of our collections. If several scholarships could be secured for special students by which they could be made student-assistants, and thus enabled to aid in the work of the Museum while carrying on their special studies, a number of properly trained assistants might be gradually obtained. Whenever further means allowed, such future officers as might prove desirable as a permanent Museum corps, might well be selected from among them and thus we should be providing against the contingencies that sooner or later will arise. There would thus be at hand a body of trained assistants who would be able to take up the work of the Museum and carry it on without interruption. In this connection I may be pardoned for adding that the future of the Museum has been much upon my mind, and that no one can more fully realize the importance of carefully providing for contingencies which might arise and undo in a day the labors of years, than he who has by close association with every object in the Museum made it a part of his very existence. To do this, however, and to provide for the care of the collections, a larger income in some form is essential, and the establishment of student-assistantships in the Museum is believed to be a feasible way of securing a portion of the funds needed for the purpose.

The growth of the Museum has now reached the point when it becomes necessary to provide further accommodations for the collections. Ten years ago this summer the collections were removed to the present building, and as cases have since been made in a room or gallery they have been filled with objects for exhibition, until every foot of available space is occupied and all the exhibition rooms and galleries are opened to the public. Notwithstanding the crowding of specimens in the cases, it is within bounds to say that nearly as many more specimens, which should be exhibited, are now packed away to keep them safe from insects, or are stored

in cupboards or drawers. Among them are those obtained from our explorations in Ohio, which are not only of primary importance for a comparative study of the peoples of that region, but are also of general interest from the character of the objects themselves. These alone will require for their proper exhibition as much shelf-room as is contained on the floor and gallery of one of the present exhibition rooms; and the objects relating to existing Indian tribes will require an equal amount of space. The collection from the shellheaps of the Atlantic coast, now contained in several hundred drawers, are also ready to be exhibited and will require a space equal to that contained in the cases on the floor of one of the present exhibition rooms. More than twice the space now given to the collections from South America is required for the exhibition of the objects now on hand, particularly those illustrating the remarkable development of the arts of the ancient Peruvians. Such also is the condition of the Mexican and Central American collections, while those from the Pueblos of New Mexico and the adjoining region have so increased that not one-half can be exhibited in the hall allotted to them. The cases on the gallery devoted to collections from the Pacific Islands are overcrowded. Of course this crowding of the cases renders it impossible to carry to the full extent desirable such an arrangement of the collections as is necessary for making the Museum a place for instruction, and many things are almost daily stored away in drawers which would add much of importance and interest to the exhibition rooms could they be placed in the cases so as not to break in upon the principles of the arrangement adopted for the whole.

These facts are sufficient to show the great need of an addition to the building, and I may be permitted to call your attention to the following statement relative to the cost of the present building and its equipment with cases and other essentials.

The cost of the building with heating apparatus, plumbing and elevator was	\$54,494 00
Since then there has been paid for furniture, re- pairs and incidentals,	2,861 77
And for cases, including those used in Boylston Hall and removed to new building,	19,256 76
Making a total of	<u>\$76,612 53</u>

As Mr. Peabody, in his Instrument of Trust, implies that \$100,000 shall be expended for a building, it seems that before the Trustees have completed their duty in this respect, about \$24,000 more must be expended. At the present time the amount remaining of the original gift of \$60,000 and its accumulations is nearly \$62,000; or, in other words, over \$76,000 have been expended and \$2,000 still remain of the accumulated income of the \$60,000 originally set apart as a building fund. It is thought that the next section of the building can be erected for about \$50,000, exclusive of cases and other necessary furniture. Should this sum be expended, it would still leave about \$12,000 which it may seem desirable to hold as a fund for incidental expenses for which there is no provision. This method would secure a building at a total cost of about \$126,000 which would be the property of the University in accordance with Mr. Peabody's instrument of gift. It is not at all likely that the friends of the University would permit the valuable collections, obtained with so much care and at so great an expense, and offered as a gift to the University, to suffer for the lack of proper cases for their arrangement and exhibition. At all events, the trustees of the Peabody fund would have performed their duty, and they could well trust to the generosity of other patrons of education to see to it that the great work accomplished by Mr. Peabody's gift was not allowed to fail by reason of the immediate want of about \$30,000 for cases and other essentials, for the protection and exhibition of the materials already obtained and which cannot be duplicated at any price. These thoughts have occurred to me while pondering over the immediate necessities of the Museum and I trust I have not gone beyond my position as its custodian in offering them for your consideration.

During the past year several large collections of special interest have been added to the Museum. The most important is the Bucklin collection from ancient graves in Peru, principally at Ancon. This collection, it will be remembered, was received at the Museum in 1879 subject to purchase, but the price asked was beyond our means and after keeping it on exhibition for two years it was stored, subject to the order of the father of the young man who made it, and who died in Peru. Three years ago an arrangement was made by which the collection should become the property of the Museum

at a fair price. The last payment has now been made and the collection is ours; but it has not yet been catalogued. It will add much to the value of our already large Peruvian collection, particularly in textiles, and in ornaments and implements made of silver and bronze, while among the objects in pottery there are many new forms and styles of ornamentation.

Another collection of over three hundred specimens of pottery obtained from the Province of Piura, Peru, has also been purchased, as we had but few things from that locality, and nearly every vessel added some important feature to our already instructive Peruvian collection. Of course it will be impossible to place all these things on exhibition until we have an addition to the building.

A third collection consists of three hundred and thirty-seven pottery vessels, a number of whistles and other objects made of pottery, two hundred and forty-five stone implements, and several large carved stones, some circular and others resembling animals, supposed by some archæologists to be seats and by others to be metates. This collection has been catalogued and placed in the exhibition cases with the other objects from the ancient graves in Chiriqui. It was obtained from the well known collector of antiquities in Chiriqui, Mr. J. A. McNiell, who has resided in the state of Panama for many years. It is unfortunate that Mr. McNiell has not been able to keep together the contents of each grave, for although each vessel is marked in such a way that all found near together can be determined; yet, inasmuch as he has been dependent on the sale of the specimens for the means to carry on his work, the objects he obtained are now widely scattered, and we have no means of tracing the development of the arts of the people, which could have been done had his collection been kept together and the associations of every object been carefully noted. His work has brought much to light that is of great interest and importance in the study of the art of the people as a whole, but it is a pity that his collections were scattered before a comparative study of all he had obtained was made. Under the circumstances, however, we are fortunate in being able to add this lot to the Appleton collection, which was also obtained from Mr. McNiell, and of which an account was given in the Seventeenth Report (1884), as we now have a fair exhibition of the ancient art of Chiriqui, in clay, stone and gold.

In connection with this addition, the following abstracts from papers read by Mr. J. A. McNeil at the meeting of the American Association for the Advancement of Science in August last will be of interest:—

“There are a few facts in relation to the antiquity of the ancient people of Chiriqui which have come under my notice that I have not seen mentioned by any other explorer.

After exploring the country between 8° and 9° N. and 82° and 83° W. (G.) for about two years, I began to discover there were but few very ancient graves along the coast line of the Pacific ocean at a lower elevation than about 500 feet. Such as were examined bore evidence of being comparatively modern, though they contained stone implements, and more of them contained human bones than those found at a greater elevation.

Considering these facts in connection with the marine origin of the gradually ascending plains, as they recede from the sea, and bearing in mind that a gradual uprising of the region is still going on, it is evident that the elevation may throw some light on the relative age of the graves along the low land of the coast and the more elevated interior.

After eight years' work, opening many hundreds of graves, I cannot call to mind an instance where human bones were found above 2,000 feet elevation, though the conditions there seemed more favorable for their preservation. The guacals (cemeteries) seem to be more numerous about that elevation, and they are, also, larger and the graves closer together. The large burial urns are only found on the higher land, 2,000 to 6,000 feet above the sea. These are, however, very generally found in fragments. As they are sometimes of a capacity of forty or more gallons they were probably too large to withstand the frequent earthquakes.

The total absence of any trace of buildings, foundations, or mounds, in this region shows a marked difference from that which is found to the north in Central America. But this is not of necessity a proof of great antiquity, as the structures of to-day if deserted would be obliterated in less than a century.

In an expedition I undertook, a few years ago, to reach a basin to the N. W. of W. Chiriqui and about $8^{\circ} 50'$ N. and $82^{\circ} 45'$ W. (G.), it was necessary to go on horse-back for three days, then on foot. We had proceeded on foot for two days, halting about 4 P. M. at a convenient place for camping. While my men were arranging the camp, my assistant took his gun and looked for game. While examining the ground at the base of the cliff, at a short distance from our camp, I discovered unmistakable evidence of guacas (graves) and many of them. When my man came in I told him what I had discovered. He then reported that he had seen similar indications on the bluff immediately above what I had found. The next morning we both made an examination and came to the conclusion that some great convulsion had broken down a part of the hill, which was 250 to 300 feet above that portion in the valley and plain. The general appearance indicated that this had occurred many centuries ago.

I may mention the fact that there is not left among the Indians a trace of a tradition to account for the race who manufactured the implements and ornaments of copper, gold and stone, and vessels of pottery, which are taken from the ground beneath their feet. The Indian will not work in the graves. He believes that the implements descended from the thunder clouds. The stone hatchets are called "piedre di raya," or thunder stones. The pottery they will not use; and even the gold trinkets have no personal attractions for them.

In conclusion, though it may have no relation to the antiquity of the graves, I may mention the fact that of about two thousand specimens of ancient pottery, stone, gold, copper and bronze which I have seen, I have failed to find a figure which seemed intended to represent a leaf, flower, or fruit, although the representations of animate objects are common."

We have also received, by the payment of expenses to the collector, a singular and important collection of objects, found by the Rev. Stephen Bowers in a small dry cave in the San Martin Mountains, Los Angeles Co., California, in 1885. The following abstract of Rev. Mr. Bowers' account of the objects and their discovery will give an idea of these interesting articles which, very likely, had been hidden in the cave by Indians many years ago. They may have been the property of some leading man of the tribe, but the number of each kind is remarkable.

"The cave was about twelve feet by sixteen. In it were nine baskets from six to twenty inches in diameter, made from tule, one of which contained fourteen pieces of red-wood about a foot long, notched, and painted with red and blue in streaks. Some of these sticks had as many as one hundred notches, and each stick was perforated at one end. Another basket contained thirty-three headdresses, from four to five feet in length, made of feathers; another, forty-five whistles made from the tibiae of deer, the "stop" being formed by inserting a mass of asphaltum, and the larger end of the bone covered with asphaltum in which is embedded a piece of haliotis shell. The most important objects found were four perforated stones mounted on handles of the hard wood of the bearberry, held fast in the holes by asphaltum. The cave gave no evidence of having been used for any other purpose than as a place of deposit for these articles. Considerable basket work was discovered in the débris, as also a haliotis shell-cup, a shell ornament, an implement made of deer's antler, and a smoothing implement made of serpentine. No determination could be arrived at as to the length of time the articles had been in the cave; but, as it was perfectly dry, they may have been there for centuries."

Of particular interest in this lot are the four perforated stones, of the same character as hundreds which have been found in the

Indian graves in southern California and also in various other parts of the world. That such circular stones of different sizes, with central perforations, were used for many purposes I have pointed out in an account of "perforated stones" published several years ago,¹ and I then suggested that some of the California stones were probably mounted upon handles for use as clubs. The four specimens from the cave show, at least, one method of mounting such stones on short handles by means of a fastening of asphaltum. However, only one of the four handles is of a convenient size for holding in the hand, the other three being so slender that unless the wood, when fresh, was of extreme toughness, the handle would have snapped if a hard blow had been given with the club. The handles are also perfectly straight, without knobs or a rough portion at the end, but an African club in the Museum has a straight, smooth handle, and the terminal knob of most club-handles must be regarded as a developed feature of the weapon. If, however, such short-handled clubs, as those from the cave, were used for throwing, as were the African knob-kerries, the smooth handle would be desirable and its size would not be of much account if of sufficient strength to sustain the stone when thrown.

Then, as is the case, probably, with nearly all primitive weapons, such clubs might pass insensibly into ceremonial objects, or staves, or insignia of office. A Peruvian club with a copper head having five plain points, and mounted on a smooth, short handle of wood is in the Museum, and with this is another star-shaped head of copper which has each point carved to represent a human head and face. The former may well be called a club and the latter may have been the head of an official staff.

There is also from Peru a star-shaped stone, with five long points, fastened to a plain staff, now broken, but which must have been four or five feet long, which, it seems to me, must be regarded as a weapon. In contrast with this is a similar stone, but with the rays reduced to slight rounded projections, which is mounted on an elaborately carved and decorated staff about three feet long. This can hardly be a weapon and is probably a ceremonial staff.

From the same region in Peru from which these pointed club-

¹ Vol. VII, pp. 135-189, with illustrations, United States Geographical Surveys west of the 100th Meridian, under Lt. G. M. Wheeler, United States Engineers, Washington, 1879.

heads came, we have three human skulls with circular indentures and holes, just such as would be made by blows given by pointed club heads like these of which we are speaking: hence it is presumable that such were used as clubs, although similar objects were also mounted on staves, probably for ceremonial purposes.

Many other specimens have been added to the Museum during the past year, some of particular interest in one way and some in another, while all are of importance in aiding us to understand the conditions of life, the surroundings and the relations of peoples of the past, or of the uncivilized races of to-day. All these are recorded briefly in the list of additions for the year, which has been prepared by Mr. Carr from the manuscript catalogue of the Museum, and cover nineteen hundred and twenty-one entries and over eight thousand specimens.

I must, however, mention, as of particular interest relating to the early period of contact between the Indians and Europeans on this continent, the presentation, by Dr. Samuel Kneeland, of two of the brass tubes found with the skeleton of an Indian near Fall River, about which so much has been written, including the well-known verses by Longfellow, entitled "The Skeleton in Armor." That two of the "links of the armor" should find their final resting place in this Museum is interesting in itself and calls up in imagination the history of the bits of metal of which they are made. Probably some early emigrant brought from Europe a brass kettle, which by barter, or through the vicissitudes of those early days, came into the possession of an Indian of one of our New England tribes and was by him cut up for ornaments, arrow points and knives. One kind of ornament he made by rolling little strips of the brass into the form of long, slender cylinders, in imitation of those he had, probably, before made of copper. These were fastened side by side so as to form an ornamental belt, in which he was buried. Long afterwards, his skeleton was discovered and the brass beads were taken to be portions of the armor of a Norseman. They were sent, with other things found with them, to Copenhagen and the learned men of the old and new world wrote and sang their supposed history. Chemists made analyses and the truth came out,—they were brass, not bronze nor iron. After nearly half a century had elapsed these two little tubes were separated from their fellows, and again crossed the Atlantic to rest by the side

of similar tubes of brass and of copper, which have been found with other Indian braves; and their story shows how much can be made out of a little thing when fancy has full play, and imagination is not controlled by scientific reasoning, and conclusions are drawn without comparative study.

The following is an abstract of a paper by Dr. Samuel Kneeland, which accompanied these interesting specimens.

"As I was fortunate enough to obtain, in Copenhagen,—where the metallic contents of the grave were sent by Dr. Jerome V. C. Smith (afterward Mayor of Boston) as marked in the written private catalogue of the Ethnographiske Museum,—a portion of this armor, I may be permitted to give a brief extract from the description of what was found, taken from the "*Memoires de la Société des Antiquaires du Nord*," Copenhagen, 1840-44, from the letter sent by Dr. Thomas H. Webb, Secretary of the Rhode Island Historical Society, in 1841.

The skeleton was found at Fall River, Mass., in 1831, in a sand bank,—near the line between Fall River and Tiverton,—fifteen feet high, in a diluvial deposit of alternate strata of sand and gravel, dipping to the east at an angle of 15° to 20° , covered with an excellent loamy soil; the lower stratum was like fine house sand, the diggings for which had undermined the bank, exposing the skeleton, aided also by the washing of a heavy rain.

The skeleton was buried in a sitting posture, with legs flexed on the thighs, and the last bent toward the abdomen, as in the usual Indian position; the hands were raised to the upper part of the chest. It was carefully wrapped in several coverings of braided or woven bark-cloth of different textures, the finest innermost; outside was a casing of cedar bark. On the chest was a plate of brass, about 14 inches long, $5\frac{1}{2}$ wide at one end and 6 at the other, evidently incomplete at both ends. Over its lower end, encircling the body, was a belt of 30-40 metallic tubes, close together lengthwise, $4\frac{1}{2}$ inches long and about $\frac{1}{4}$ of an inch in diameter. These tubes were formed around pieces of hollow reed, the edges being brought so nicely together that they look like unbroken cylinders; through the reeds, sinews or narrow strips of hide were passed, and the ends braided together, so that another similar string might run transversely at top and bottom.

This specimen is in case No. 41, in the Ethnographiske Museum in Copenhagen, where I saw it repeatedly in 1884-5, and was allowed to examine the tubes by the Director; this, with some other specimens, is marked as having been found in an Indian grave, and presented as before stated.

The three tubes I have are a small part of this belt. In the same case, marked as having been found in various graves near Fall River and Middleborough, Mass., are copper, silver, bone, and bronze (so called), specimens of spoons, pieces of vases and bits of the above-named breastplate. As the last and the tubes are called bronze, while they are really brass, it is not probable that any of the specimens are of bronze, which would

not be likely to get into Indian hands, while brass, we know, often did in their intercourse with the whites in the latter half of the seventeenth century. With brass (though called bronze) arrowheads, were stone arrowheads. Some half a dozen arrowheads, of the same material as the plate and the tubes, were found with the same skeleton, nicely packed in bark cloth and moss; the form of the heads was regularly triangular, more so than most such specimens, yet not varying from many copper and brass arrowheads found in various parts of the country, of which there are several specimens at Cambridge.

The skeleton, said to have been destroyed by fire at Troy, an old name of Fall River, about 1843, was pronounced that of a male, though not of a powerful one, perhaps of a half breed; no Indian burial ground is known to have existed in this locality, though there are two about half a mile distant; only one other skeleton had been found in the vicinity, and that so decayed as to furnish no evidence; the region was occupied by whites as early as 1661, about forty years after the landing of the pilgrims. No article of unquestioned European manufacture, the brass excepted, was found, and nothing that appeared like the work of civilized man; in the Indian burial grounds referred to, everything found was of the ordinary Indian manufacture, and nothing resembling the plate and tubes above alluded to. From negative characters the skull was said to be not characteristically Indian; another fact, if it be a fact, in favor of this being an effeminate, trading, perhaps distinguished half-breed, buried alone at a distance from his tribe. The breastplate was analyzed by the celebrated chemist Berzelius, and found to consist of about 70.25 of copper and 28 of zinc, with less than one per cent of tin. I had the tubes analyzed by Prof. Richards, of the Institute of Technology, who said that they contained considerable zinc and no tin; so that they are of brass, and not of bronze, nor of copper as stated by Schoolcraft and those who have copied him to the present time. This alloy no Indian tribe could have made, and it must have been obtained from the whites, most likely in the form of a brass kettle.

As to this skeleton, the conclusion seems undeniable that it was that of an American Indian, pure or half-breed, and not antedating one hundred and eighty years the time it was found, 1831, or about 1650. I think the posture in the grave, the wrappings, the cedar bark casing and the absence of any articles (other than the brass) of undoubted European manufacture, sufficiently indicate this; yet, the isolated position of the grave, the unusual character of the material and form of the weapons and ornaments, dismissing the idea that the belt was defensive armor, would seem to suggest either an individual of mixed blood, or one who had, in a comparatively high position, lived in unusually intimate contact with the whites. Moreover, it is my belief that the pattern of the belt is not a native one, but borrowed from northern Europe, perhaps via Greenland and the Skrälings or Eskimo, who evidently, in the eleventh century, lived much farther to the south than they do at present. Finally that, though the skeleton and the belt were probably less than two hundred years old, the idea or

pattern of said ornamental covering is thrice, at least, as ancient, and that possibly the similar tubes of copper, found extensively in graves in various parts of this country, may have had a non-American origin; the last opinion I lay no stress upon, as it is simply an hypothesis, to establish which many old records, in the old and the new world, are yet to be thoroughly investigated."

In regard to the explorations conducted by the Museum, I have great pleasure in stating that they have been continued, thanks to the aid given by a few friends, and much valuable material as well as important results have been obtained. Still we have not been able to do all that we ought to do in this respect, and while there are yet many places which should be explored, as I have stated in former reports, every year that passes makes it more difficult to get access to them, even if their archæological value is not destroyed by the march of improvements and the cultivation of the land.

During the past summer an appeal was made for aid, by which the Museum could continue in this work, and although this appeal (which is repeated in connection with this report) came to the attention of but few persons, the results were very gratifying, inasmuch as they showed that there is an interest taken in American explorations. Owing to the assistance then received, we have been able to carry on our field work in Ohio, and have also been able to secure all that was found during the partial destruction of the great shellheap on the Damariscotta river, in Maine.

This, the largest of the shellheaps on the New England coast, was purchased by a company and is now being ground up for fertilizing material. During the year, the mill has been at work, but we have been able, by an arrangement made with the owner of the heap and the fertilizing company, to keep Mr. A. T. Gamage on the spot to look after everything connected with the structure of the heap, and to secure all objects found during the carting away of the shells. In this work, Mr. Gamage has proved a most efficient person and has secured many things of interest, although the heap in proportion to its size is not nearly so rich in objects, made and lost by the people who formed it, as are many of the smaller heaps which we have explored on the coast of Maine. This, in itself, is an important point in its history, and when the material thus obtained is arranged and compared with that from the other heaps, we may be able to ascertain the relations of its builders to those who left the other refuse piles on the coast.

With this material are portions of several human skeletons, and although the collection has not yet been unpacked, the full notes taken by Mr. Gamage show that it contains much of interest. Mr. Gamage has also made numerous sketches and measurements, and has had several photographs taken by which to illustrate the structure of this great pile of shells and other refuse materials. This will add very much of interest to our already rich collection illustrating the shellheaps of the Atlantic coast, and it now becomes still more important for us to continue our explorations in this direction. To-day, owing to the purchase of many of the sites of the heaps along the coast of Maine for summer residences, places where we could have explored to any extent two years ago are now levelled or built upon; and so rapid is this increase of dwellings along the coast that it is truly "now or never" if we wish to find out more about the old builders of the heaps and the condition of things at the time they were in process of formation. Six hundred dollars are much needed for the prosecution of this work during the present season. Will not some one furnish this sum?

Dr. Abbott has kept watch during the past year on the excavations made in the deposit of gravel at Trenton, and has been rewarded by the discovery of several more of the rude stone implements lost by the early men of the Atlantic coast, and also by finding several pieces of argillite which have an important bearing upon the study of the palæolithic implements. He has also obtained numerous specimens of chipped implements and other objects from the surface of the fields of his farm, which has now become so well known to archæologists and naturalists, while his three charming little books¹ of local sketches of animal life and scenery have given a wider interest to all relating to his remarkable surroundings.

His gatherings of archæological material have been sent to the Museum from time to time to be added to the instructive collection known by his name. It is greatly to be desired that his researches may be extended to other portions of New Jersey for comparative purposes, and I hope the Museum will be able to furnish the small sum required to enable him during the present season to explore one region in particular, as it will probably prove to be the site of an old Indian settlement, and very likely will add

¹ "A Naturalist's Rambles about Home," "Upland and Meadow," and "Waste-land Wanderings."

much of importance to the knowledge of the successive occupants of the Delaware valley.

To the unflagging interest of Dr. Flint in the Museum, and in the antiquities of Nicaragua, we are indebted for several interesting specimens during the past year, particularly for some fossil leaves found over the layer of tufa containing the human footprints, for a sample of the sand upon which the tufa rests, and for information relating to the surrounding geology of the lava deposits. He has also sent us several vessels and a number of stone beads found in Nicaragua. I have so often called attention to the importance of Dr. Flint's researches that it is not necessary here to insist upon the desirability of helping him to continue his labors. Still I should be remiss in my duty did I not inform you of his readiness to explore a few burial mounds which are still intact, if the means can be furnished. This is an important region in relation to the connection of the ancient peoples of North and South America. The occurrence in Nicaragua of implements and ornaments made of a variety of jade, not yet known in place on this continent, also indicates the importance of explorations there, in order to secure all the evidence possible, both pro and con, relating to a migration from Asia to America which, in the absence of any other known locality than Asia for this particular variety of jade, seems to be indicated by the articles made of that stone.

In this connection I may add that we have obtained several of the so-called jade implements from Alaska, and as they are made from minerals unlike the Nicaraguan specimens, they do not conflict with the suggestion that the latter were derived from Asia. Of course, this is negative evidence and does not prove the correctness of the proposition; but until further discoveries are made the reasons given for the Asiatic origin of the Nicaraguan jades seem to be worthy of consideration.

A thousand dollars expended now in Nicaragua and Costa Rica would give material which a few years hence cannot be secured at any price and would prove of the utmost interest. So it is with all our field work. Now is the time to collect facts by systematic exploration. Haphazard gatherings are no longer of value in solving the great problems relating to the past, and yet such collections are constantly being made and auction sales of "relics" continue, to the great detriment of archaeological research.

Thanks to a few friends, the special work of the Museum has been continued during the past year in the valley of the Little Miami river, Ohio, and important discoveries have again crowned our efforts. Instead of writing of this anew, I may be permitted to incorporate in this report the two letters which I wrote while the work was going on, although they have been published in the Boston Herald and copied into other newspapers in various parts of the country, as they briefly give the facts which will be detailed in full in the Memoir, now in preparation, which you have requested for publication.

PEABODY MUSEUM CAMP, }
BROWN COUNTY, O., Sept. 20, 1886. }

MY DEAR FRIEND: The promise made to send you an account of the archæological explorations which you have done so much to promote, is not forgotten, and I take this opportunity to fulfil it.

On Sept. 4, by permission of Mr. Robinson of New Boston, we pitched our tents on the top of a hill overlooking Stone Lick, a tributary of the Little Miami River. This point was selected, as Dr. Metz had discovered on the hill a few flat water-worn stones which, evidently, had been placed there by human hands. Our party was as follows: My associate in the Ohio work, Dr. C. L. Metz of Madisonville; Mr. John Cone Kimball of Boston, a volunteer assistant in the Peabody Museum and the photographer of the party; Mr. C. F. Low of Madisonville, an occasional and welcome visitor; Matthias Britten and Timothy Ryan, two trusty men who have worked for the museum in the Ohio explorations for the past five years, and the cook. Our camp consisted of two large square tents with flies, and three A tents for the men. Wherever we pitched our tents we were the wonder of the residents and passers-by, many of whom believed we were hunting for buried gold and not for the remains of a past people; but when they visited us and found us photographing skeletons, which we had carefully uncovered, and making notes and drawings of the graves and their contents, they believed in us, and with few exceptions were ready to give their aid in various ways, and offer us chances to dig on their lands. Occasionally we met with mercenary individuals who were resolved to get all they could out of us, but the few mean spirits of this kind were lost in the generous hospitality with which we were received in our wanderings in the beautiful valley that we have been exploring so long, and where there is yet so much to be done before we can understand fully the history of the peoples who were living there for unknown centuries before Columbus, and of those who contested the claims of the first white settlers to their homes.

Calling to our aid several more men to handle the pick and shovel, we discovered, on removing the sod and accumulated soil on the highest point of the hill, a large number of stones which had been brought from

the bed of the creek far below and placed here and there over the surface, covering a space about forty by fifty feet. We started the exploration of this place by making a trench along the edge down to the hard-pan. The earth was then removed along the front line of the trench, always going down to hard-pan, and thrown behind. In this way, a vertical wall was always in front of the diggers, and the bottom of the trench was kept clear of loose dirt for the space of two or three feet, so that any former disturbance of either the soil in front or of the hard-pan below could be detected at once. In course of time, five large flat stones set on edge, in a row, were discovered, and by the side of these, about a foot down in the hard-pan, lay a human skeleton extended at full length on its back, with the skull, which was at the north end of the grave, turned to the left side. Close to the face lay the upper and under jaws of a beaver, both of which had been cut. A few inches from the top of the skull were the jaws of a wolf, which had been cut lengthwise, so as to remove about half of the roots of the teeth and form a smooth, level base to each piece. Near these were a flint arrowpoint and four flint flakes. A few inches north of the arrowpoint was a shell of the box turtle and two large points made of leg bones of the deer. On the left side of this skeleton, between the shoulder and the hip, was a pile of bones belonging to a second skeleton, more or less burnt. The fragments of the skull were burnt more than any of the other bones, while the vertebrae and the arm and leg bones were only partially burnt. The relative position of the bones in the grave indicated that the remains had been gathered before the flesh had been entirely removed from the bones, as they were mostly in a natural position. That these burnt remains had been buried at the same time with the body of the other individual was evident.

Five feet northwest of this grave, at about the same depth, we found that of a child. A few fragments of the skull, two teeth and a piece of a rib were all that remained of the skeleton. In the grave, near where the head had rested, was a piece of a shell, probably a *Unio*, the edges of which had been cut and notched, and near the piece of a rib were eight perforated seashells (*Olivella*), a pendant made from the tooth of a bear, and a large natural pearl with a hole drilled through it. About the middle of the grave lay a fine "gorget" made of blue slate. This stone had been broken across the central hole, and a new hole had been drilled on one side, while two other holes had been drilled opposite to each other on both pieces of the stone, evidently for the purpose of tying the pieces together, and that it was so tied at the time it was placed in the grave was shown by the broken edges of the two pieces being in perfect contact.

These two graves were the only ones under the stones, which, evidently, had been placed over and about them to mark the spot. There are similar places on other hills in the vicinity which we shall explore at another time. After a week at this camp, during which time we examined a large earth circle on the creek bottom, near the centre of the little village of Stone Lick, we moved up the east fork of the Little Miami to Brown county to examine several mounds on the uplands. On this journey we passed

through the villages of Boston and Cynthiana to Vera Cruz, in the limits of which we made our next encampments, first on the land of Mr. Matthias Schmitz and afterward on that of Mr. Robert McCafferty, by both of whom we were most cordially welcomed and assisted.

At this place we explored thoroughly two mounds and examined what remained of another. The two to which I shall refer were more than a mile apart, and situated on high land, near springs, and not far from the river. While little that could be brought away, was found during the progress of the work, the mounds themselves proved of great interest, as they were of a character varying considerably from those we had explored, in past years, farther down the river.

The Schmitz mound was 36 feet in diameter, and was once probably about 5 feet high, but had been reduced to 3 feet by ploughing. Employing eight men, the work of exploration was begun by digging a straight trench down to the clay hard-pan across one edge of the mound and another on the opposite side. The mound was then cut down in slices, throwing the earth behind and always keeping a vertical wall in front. At three feet from the north edge and close to the hard-pan, we found a long point chipped from a piece of dark flint and a smaller one of gray flint. On the opposite side, at about the same depth, were a few fragments of coarse pottery. This outer portion of the mound consisted entirely of clay with a light surface soil. As we approached the central portion, a change took place in the character of the mound, and the clay below showed that it had been burned. We then cut trenches at right angles with the first, along the edge of the mound, and continued excavating until, reaching similar signs on these sides, we found that there remained in the central portion of the mound a burnt space, 11 feet east and west by 7 feet north and south. Over the burnt hard-pan of this portion was a compact bed of ashes, mixed with charcoal, from 2 to 3 inches in thickness, and over this a layer of clay, burnt to a red color, 6 to 8 inches thick. Above this was another layer of clay, about a foot thick, which had been burnt slightly, and covering this was from one to two feet of clay with the light soil above. The layers, with the exception of the outer one, were horizontal, and had been carefully superimposed over this central bed of ashes. The fire by which this mass of ashes had been formed must have been long continued, as the quantity was too great to have been the result of any ordinary burning, such as the destruction by fire of a dwelling of the size of a mound. That there had been some kind of a structure on the spot, however, was shown by the twelve post holes around the ash-bed and the three below it. These post holes are round soft places in the hard clay, from 1 to 2 feet in depth and from 8 to 14 inches in diameter. The soft material filling the holes is made up of particles of decomposed wood, earth which has sifted in, and, generally, more or less of a deposit of iron. In some of the mounds we have found holes coated with iron, in which was the cast of the bark covering of the post; and in others we have found fragments of the wood itself preserved by the infiltration of the iron. Often these holes contain a little charcoal, the remains of a burnt post. We have also found potsherds,

stones, animal bones, broken stone implements and other things in the holes, as if they had been put there to aid in setting the post; and a long experience has led us to consider these holes as post holes, but they must not be confounded with another class of holes, or "soft spots," which we have called pockets, or pits, according to their size and shape. These "soft spots," of whatever character, are carefully cleaned out, measured, and located on the ground plan of the mound, as they are discovered. In the present instance the three holes under the ash-bed indicated that these posts had stood a few feet apart near the centre of the mound, and that the others were irregularly, but about equally, distributed in the four portions of the space covered by the mound, which we designate by drawing a line north and south and another east and west through the centre.

Giving our attention now to the central portion of the mound, we sliced away all the material above the ash-bed without finding anything of interest except the layers as I have described them. We now had the whole bed of ashes laid bare, and this was examined, removing it inch by inch with small flat trowels. In a few places the fire had been greater than in others, and the clay below was more burnt, as shown by its red color. In some places there were large pieces of charcoal, showing a smothered fire; in others the ash was light-colored and pure, showing a free burning of the wood. In two places near the outer portion we found several potsherds. We discovered, also, a few burnt hickory nuts, suggesting that the burning had taken place in the autumn. A few flint chips and one arrowhead of flint were found partly in and partly under the ashes. At the north-western corner of the ash-bed, clay had been placed, making a pile nearly a foot thick and two feet across. On this there had been a hot fire, and the clay was burnt red throughout. In the black ashes about and over this place were found about a dozen small fragments of human bones more or less burnt and much decayed. These consisted of a piece of one of the arm bones, about five inches in length, and minute fragments of different parts of the skeleton. There was no grave under this central bed of ashes, and the few fragments of partly burned bones found in the ashes give the only clew to the origin of the mound. From the description I have given, it will be seen that a large amount of wood must have been burnt, and that at one place a fierce fire had been kept up for some time; that during this time the body of at least one person had been consumed; that after this had taken place, clay had been put over the fire, by the heat of which it had been partly baked from below, and that another fire had been made upon it so as to burn it red. The ashes from this fire had been swept away, and another layer of clay placed over the one that had been burnt. This in turn was either slightly burnt, or else the heat from the previous layer was sufficient to color it. Over this the outer covering of clay soil extending around the burnt mass and forming the outer portion of the mound, was heaped up, and the structure was completed,—a monument to commemorate the ceremony which had taken place.

While we may thus conclude that the mound was erected over the spot where mortuary rites had been performed, it is only by inference that we

can consider the next mound explored as having been built for the same purpose.

This second mound was about a mile from the first, and on the land of Mr Robert McCafferty. It was about 60 feet in diameter and 5 feet high, but the older people in the vicinity remember before it was first ploughed over, when it was four or five feet higher. It was situated on high ground, with a deep gully, in which is a never-failing spring, on the north and east. About 140 feet north was a much smaller mound, now nearly levelled by the plough, and there are no others in the vicinity nearer than about half a mile. We commenced work with eight men in the same manner as with the previous mound. The outer portion of the mound consisted of clay underlying the light surface soil. On the southern slope, about 18 inches from the surface, we found portions of a human skeleton which was evidently an intrusive burial in the side of the mound. Such graves are common in the mounds and they have caused considerable confusion. As they are necessarily later in time than the mounds, they may contain the remains of recent Indians, or even whites, it being a common custom for the early settlers to select such burial places. A mound many centuries old therefore may be carelessly classed as one of late date from the finding of glass beads, brass buttons or iron nails with such intrusive remains. Soon we found the structure of the mound changing, showing burnt earth with a little ashes. This was soon followed by the discovery of a large bed of ashes under the central portion, the same as in the Schmitz mound. On the southern edge of this bed, at its base, we found a beautiful stone celt highly polished, and several feet from it, at the same level, four large points or knives, chipped from flint. A few feet from the last, but in the mass of charcoal and ashes, were pieces of a large dish of coarse pottery. We cleared off this ash-bed and found that it extended 41 feet north and south and 31½ feet east and west, and that it was from 8 to 10 inches in thickness. A section of the mound near the centre showed first, the hard clay, colored by the fire upon it; then 10 inches of ashes mixed with charcoal and a few fragments of animal bones; then 18 inches of clay mixed with ashes; then 2 feet 10 inches of clay. Every inch of this great bed of ashes was dug over with care and, with the exception of a few places where clay had been put and burned to the color of a brick, and one place where the ashes had been gathered into a pile 6 feet in diameter and 2 feet high, near the centre of the mound, we found but little that could give a clew to the uses which the place had served. A few animal bones, a few flint chips, and on the east side a large rubbing stone, were all that were discovered, except the ashes and charcoal of a long continued fire. In two places, masses of charcoal showing logs of considerable size, were found, and in the hard clay under the ash-bed were imprints of short pieces of logs which had left nothing but their dust in the cavities. Under this ash-bed were about sixty post holes, some of which were close together as if small supporting braces had been placed against large posts, and they were so arranged that none were nearer to the centre of the mound than 6 to 8 feet. Their

arrangement suggested a series of posts supporting a structure of some kind which was destroyed when the fire was first started. Most of the holes contained considerable charcoal, showing that the posts had been burnt. Thus, apparently, there was originally here: A wooden structure which was burnt, and this was followed by a long-continued fire until the immense bed of compact ashes had been formed. On this, in some places, clay had been placed and burnt hard. Over this bed of ashes, clay mixed with ashes, either from the edges of the bed, or from some other fire, had been placed and over all the thick layer of clay, making a mound of 60 feet in diameter by at least 8 in height. What was it for? Did these two mounds commemorate ceremonies connected with the dead? Were the bodies burnt here and the ashes elsewhere buried? As our explorations progress we may discover the meaning of mounds of this character, as we have solved other mysteries.

To-morrow we shall move our camp down stream twenty-four miles to the mouth of the East Fork, where we have planned to continue the explorations of the interesting locality, embracing the Turner group of earthworks, to which, for five years, we have given almost constant attention and I will write you of what we find there.

Very truly yours,

F. W. PUTNAM.

PEABODY MUSEUM CAMP, }
HAMILTON COUNTY, O., Oct. 2, 1886. }

MY DEAR FRIEND: Since I wrote to you two weeks ago from our camp in Brown county, we have been here and have had such wonderful success that I can truly say a new chapter has been added to our archaeological work in the valley of the Little Miami. First, you must know that our camp is pitched by the side of the great pile of earth we turned over in our explorations of the group of altar mounds on the land of Mr. Michael Turner. You will remember that we have been working, with occasional necessary intermissions, on this and the adjoining farm of Mr. Benjamin Marriott for the past five years, and that this is the place where we have discovered so much of interest within the great earthwork of which the following is a sketch:

A hill through which two ditches, 30 feet deep, had been cut, separating the hill into three parts. Around the central portion a wall of earth had been raised, making a perfect circle 550 feet in diameter. In this inclosure was a large mound, and near it a small one. These mounds, you will remember, proved of great interest, particularly the large one, with its stone wall four feet high, surrounding an altar of burnt clay. You will remember also that we found several human skeletons in the clay outside of the stone wall and two others on the wall, with various objects made of copper, shell and stone. The earth taken from the ditches was used to make the graded way from the top of the hill to the level land below. This graded way connects with an embankment of earth, somewhat oval in

shape and 1,500 feet in its greatest diameter, in which are two openings. Opposite the northern opening is an earth circle 300 feet in diameter, and in this is a small mound which we have not yet explored. Opposite the eastern opening is a mound 9 feet high. It was on this mound that we began our work at this place five years ago. At the foot of the graded way is a small circle inclosing a burial mound. North of this circle were two other burial mounds and south of it was the great group of altar mounds, around each of which was a wall of stones, 4 feet high, built below the surrounding level of the field. These mounds contained from one to seven altars, formed of clay, on which fierce fires had been made. It was in two of the basins of the altars in the mounds, that we found the immense number of ornaments of various kinds, particularly of copper, the 60,000 pearls, hundreds of shell beads and other objects, also the wonderful little figures in terra-cotta representing men and women. All these objects had been thrown into the fires upon the altars, evidently as sacrifices or burnt offerings during an important ceremony. The thirty-seven pits with the singular tubes or "flues" connected with them; the concrete layer of ferruginous gravel over them; the singular structure of the great mound, 100 feet in diameter and 20 feet high; the great pit containing the many skulls, some of which had holes drilled in them, arranged around two skeletons placed in ashes, all serve to show that connected with this group of mounds were extensive ceremonies of the deepest import to the people.

These extensive earthworks, made on such an elaborate scale, and containing evidence of the wealth of the builders, as well as of the ceremonial character of the works themselves, necessarily lead to the conclusion that there must have been a large number of people connected with their construction. The beautiful location of this group of earthworks on the level second terrace, which extends for miles in the fertile valley and is surrounded by hills from which flow never failing springs, indicate that in this region there must have been a large population: yet the few human remains which we found in the mounds within and without the encircling earth wall are not sufficient to meet the requirements. Such remains were probably those of distinguished persons, buried with special honors; but where were the other dead? Then the many altars, or basins of burned clay, which, evidently, had been used over and over again, and were, with two exceptions, empty when the mounds were erected over them, are indications of cremation, and yet where were the burnt human remains? Cremation in open fires will, necessarily, leave many fragments of calcined bones with the ashes, unless such remains are burnt over and over again, and special pains taken to reduce all to ashes, and yet we had found in a niche of the stone wall about the large altar mound, the burnt bones and ashes of but one individual. If these altars were the places where cremation took place, what then had become of the remains? These were the questions which Dr. Metz and myself often asked of each other, and we felt confident that somewhere near by there must be a general burial place for the common dead, and many a hunt was made for surface indi-

cations. On the north and south sides of Mr. Turner's barn and west of the large circle, are two scarcely perceptible ridges similar to other slight irregularities here and there over the field. Owing to the cultivating of this place for many years and to the tramping of cattle in the barnyard, these ridges have been more or less worn down, and a few water-worn stones have been exposed on the surface. These were first noticed by Dr. Metz about a year ago. As soon as our camp was pitched we took a look at these water-worn stones. They were fragments of limestone, filled with fossils of the silurian age, lying on a deposit of gravel, over which, long ago, had flowed the waters of the Little Miami. What more could these stones have said, had they been endowed with speech, than that which was evident to our eyes: "We were long ago brought here by men." Here, then, was something more to be revealed in connection with the history of these great earthworks of an ancient race, and here we would dig a trench on the morrow. We started our trench sixty feet west from the wall of the circle, and well outside of the slightly elevated portion, which, we were afterward told by Mr. Snyder, who remembers the place fifty years ago, was formerly much more marked, and had the appearance of a long, low mound. Digging down to the hard-pan, we carried our trench westward for about ten feet, when we came to three large water-worn stones regularly arranged, side by side, in the gravel hard-pan.

It is necessary for you to fully understand the character of the earth in which we were working in order to appreciate the labors of the ancient people at this place, and I may well add our own in making these researches. First, the surface consists of a few inches of dark soil overlying from 8 to 10 inches of clay. Under this clay is a layer of coarse gravel, containing many pebbles, some of considerable size, but all colored and firmly cemented by an amount of iron, which, from some natural cause, is far in excess of that in the gravel all about. This iron-cemented gravel forms an irregular layer of from 1 to 4 feet in depth, and under it is a loose, uncolored gravel, mixed with sand, which, judging from a gravel pit near by, is certainly 30 feet in depth, and probably much more. It may be that this is part of the great terminal glacial moraine which Prof. Wright has been tracing across the state of Ohio. In this ferruginous gravel, the stones we found were embedded. On cleaning off these stones, we found that there were others at right angles to them, and soon we made out that we had at last discovered a grave. Would it prove to have any connection with the people who built the earthworks and the altar mounds? Our hopes were great and they were soon to be realized so far as one grave could tell the story.

On carefully removing the earth from the eastern end of the grave, close to the stones, we discovered the toe bones of a human skeleton, and, after several hours of the hardest kind of trowel digging, we had the satisfaction of exposing the skeleton lying at full length on its back. Its skull, slightly turned to the right, rested on a flat stone at the western end of the grave. On the left side of the skull was a large sea shell of the genus *Busycon*, from which the central portion had been removed, a com-

mon method of making vessels among the various peoples of America, and often found in burial mounds and graves from the gulf states to Michigan. With the bones of the neck were several shell beads, also of a common form, and as widely distributed over the country as the Busycon shells. The arms were extended at full length along each side, and inclosed by the bones of each hand, resting on the hips, was a spool-shaped ornament (which our explorations have proved to be ear-ornaments) made of copper, like those found with several of the skeletons in the mounds of this group, and like the large number found on the altar in the great mound of the group.

We have at the museum ear-ornaments of this character from burial mounds in various parts of Ohio and west to the Mississippi in Illinois, and from central Tennessee; but I have never found them in any of the several thousand stone-graves of the Cumberland valley, which I have explored, nor have we found a trace of them among the hundreds of graves associated with the singular ash-pits in the cemeteries which we have explored in the Little Miami valley, nor with the skeletons buried in the stone mounds, nor in many of the simple burial mounds of Ohio. They seem to be particularly associated with a people with whom cremation of the dead, while a rite, was not general, and who built the great earth-works of the Ohio valley. That it is an ancient form of ornament, made from native copper, there can be no doubt, although they may have been made also by the descendants, or conquerors, of this people in later times; and it is not at all improbable that the form of the ornament may have survived to the time of contact of the "red race" with the white. I can only say that, in all the recent Indian graves I have opened or know about, this peculiar kind of ornament has not been found; and if they were ever made by the whites and furnished to the Indians, I have never happened to find any that showed evidence of the fact. We have certainly found them under such conditions in Ohio that they must have been buried with their owners long before the time of Columbus. Then, again, all we have found have been made by hammering pieces of native copper, and not by casting the metal.

By the side of the right tibia of the skeleton in the grave were a copper pin, a wooden bead covered with thin copper, a few long, slender flakes of flint, and a fragment of some kind of an ornament made of shell. These long flint knives are of the same shape and character as the well-known obsidian flakes from Mexico, and we have found them, as a rule, associated with copper ear-ornaments like those in this grave. They are sharp-edged and are as good knives as the Mexican flakes. While speaking of them in general terms as flint, they are in reality flakes struck from several varieties of stone, many of them being of a bright red jasper and others of chalcedony. The wooden bead covered with copper is of the same character as others we have taken from the burial mounds in which we have found the copper ear-ornaments. Close to the right hand and hip, but two inches above them and covering a space a foot in diameter, was a mass of fragments of burnt human bones, with bits of charcoal mixed with

ashes. These remains of a cremated body had been gathered from the place where it had been burnt, brought to this grave and placed by the side of the body at the time it was laid in the grave. The close contact of the remains to the finger bones of the skeleton, which were not disturbed, was sufficient evidence of this. Here, then, in one grave, we had found the evidence associating it with the altar mounds and the rest of the earthworks about, independently of the fact that the grave itself was within the earth wall surrounding all the other works. We had found, evidently, the burial place of the people, and this was abundantly confirmed as our work progressed.

We have now for two weeks been engaged in exploring this burial place, and during this time we have discovered eighteen graves, four large, deep pits, and several holes dug in the gravel, as well as places where there had been fires, and numerous other interesting facts, many of which, by themselves, would be trivial, but which, when they are all put together, will give a far better idea of the customs and works of the people who made the great earthworks in Ohio than it has been possible heretofore to obtain. All other explorations in the state have been fragmentary. No other systematic work has been attempted, and hence we have had plenty of theories built upon partial facts. We have much to do before the exploration of this single group is completed. The question is, simply, will friends help us to pay the cost? With money for this purpose, we shall be able to continue these important researches. So far, generous friends have supplied it, and all we can do is to work on as long as possible and hope for further aid.

To give you a detailed account of all we have found during these two weeks would, I fear, draw too much on your patience, notwithstanding your great interest in the work, and I shall only call your attention now to a few of the more interesting points. Of several of the graves, Mr. Kimball has taken photographs, and when they are printed you will obtain a better idea of the graves than from any description I can give. Individuality had its exemplification in this old cemetery, the same as it has in our modern ones, and the modifications are so great that no two of the graves thus far discovered are alike. In one instance there were no stones about the skeleton; in another a carefully built wall had been made of long, narrow, flat stones, and a regular wall, four layers high, had been made in the same way that a mason lays bricks, but without mortar. In some graves flat stones were placed at the bottom; in others the skeleton was firmly embedded in the gravel, while in one the body had been placed in a thin layer of clay placed over the gravel. In one grave there were two skeletons, one extended at full length on its back and the other crowded into the grave by the side of the legs of the first. A child was placed in a small circular grave, the body having been so arranged that the head and the feet were not far apart. Most of the graves were comparatively shallow, extending from six inches to a foot into the layer of gravel. The deeper the grave the better the condition of the skeleton. One grave was dug to the depth of nearly four feet in the gravel, and was seven feet long

by four in width. At the bottom was a pavement of flat stones, forty-nine in number. On these stones the body had been extended, and the grave had been filled up with over 300 stones, all of which had been brought from the river bed, nearly a quarter of a mile distant. Over these stones six inches of gravel had been placed, around and over which other stones had been regularly arranged. The free percolation of water through the stones which filled the grave had caused the skeleton to decay; only a few fragments being left. These graves were not covered with large stones, as is the case with the stone-graves of Tennessee, and there is but little in common between the two. Another class of graves were basin-shaped, small in size, and carefully made of flat stones. In them we found burnt human bones and ashes. In one was a pipe carved from stone which had been burnt with the body; and, in another, were fragments of a burnt copper ornament.

I must give you an account of the graves which were of particular interest.

Grave No. 5, in our notebook, was 6 feet 6 inches long, 2 feet 9 inches wide, and 1 foot 8 inches deep, measured from the top of the wall of stones. It was made with care, and the stones were carefully placed so as to form a substantial wall. The bottom was completely covered by four large, flat stones, on which the skeleton lay on its back. The skull was at the east end of the grave. When the body was put in the grave the knees were drawn up, the left hand rested on the body, and the right was laid straight along the side. The result was that the bones of the left hand were found in close contact with the upper ends of the tibiæ, which had fallen down between the femora. In the bones of each hand was a copper ear-ornament like those I have mentioned. In the corner of the grave, near the bones of the left foot, was a large sea shell, from which the central portion had been cut away. Near this was a little cup carved out of stone, two canine teeth of a bear, each with lateral perforations, and in each tooth was the chalky remnant of a large pearl. Close to them was a large crystal of galena, and a knife made of a long flake of flint. On the same side of the grave, nearly opposite to the shoulder and partly under the side stones, were eight of the copper ear-ornaments in a bunch and under them a long bone point. We did not discover them until we had taken out the skeleton and began to remove the stones, for it is our rule always to remove everything placed by human hands, and to turn over every inch of dirt previously disturbed. On taking up the flat stones, which were firmly embedded in the gravel, and had their edges covered by the side stones, we found the following articles, which must have been placed where we found them before the stones had been put down. Under the second stone (there was nothing under the first) near the centre were a copper bead and small thin pieces of iron, perhaps meteoric, but it has not yet been analyzed, and it may prove to be bog iron which has formed in that place.¹ As we have found several ornaments made of meteoric iron

¹This iron has since been analyzed by Dr. L. P. Kinnicutt, who has determined it to be limonite, or bog iron, which must have been deposited by water in the little cavities under the stone.

on the altars of the mounds in this group, as well as two good-sized pieces of iron meteorites, this iron may be the same. [It proves to be bog-iron.] Under the third stone were two discs, or halves, of a copper ear-ornament. These were several inches apart, and must have been so placed when the stone was put down. Near these was a wooden bead, with a thin covering of copper. Under the next, or fourth stone, were several of the long flint flakes or knives, and eight inches from the edge of the stone was a small copper celt. These deposits, under the stones on which the body was to be placed, certainly suggest the offerings of friends at the time the grave was prepared, and the various other objects placed in the grave with the body can, with equal reason, be looked upon as the property of the deceased, or as friendly offerings. At all events, they are important as proof that the individual buried here belonged to the people who built the mounds, as these several objects are of the same character as the many we have found on the altars, and with the few skeletons in the burial mounds of the group.

Grave 15, of our notes, was remarkable for the care with which the walls, sixteen inches high at the head and foot, were made of four layers of flat stones, while along the sides, in the clay above the gravel layer, was simply a row of stones. The skeleton was lying firmly embedded in the gravel, extended at full length, on its back, with the skull at the west end of the grave, while the toe bones were against the opposite stones. The skeleton thus extended the full length of the grave, which was six feet three inches. As with nearly all the adult skeletons, there was a copper ear ornament in the bones of each hand. On the breast bone was a copper band. At the neck were two shell beads, and near the left shoulder was a flake knife. A few inches from the left foot were about twenty of the long flake knives, carefully laid together, as if they had been wrapped in a piece of skin or cloth when placed in the grave.

With two other skeletons we found celts made of soft coal. These were perfectly made, with fine smooth edges and polished surfaces, in exact imitation of the ordinary stone celt or hatchet; but as they would have been worthless for the uses to which stone celts were put, it is likely that they were ornamental or ceremonial objects.

I will allude only to one more grave, No. 18, of our notes. This was marked by a mass of gravel a little over seven feet long and nearly three feet in width, around the edges of which were small stones, eight to twelve inches long. This mass stood up eight inches from the gravel layer under the clay. Removing these stones and gravel, we found loose gravel filling a pit just seven feet long and three feet four inches wide. At the depth of two feet we came to hard undisturbed gravel, and on this was a human skeleton extended at full length on its back, with the skull at the southeast end of the grave. The bones were firmly embedded in the gravel, and so dry that great care was necessary in removing the matrix. However, after nine hours of unremitted labor with small trowel and brush, they, and the several objects associated with them, were all uncovered and left in place, even to the finger and toe bones, until a photograph was taken showing everything in place.

In each hand was one of the copper ear-ornaments of the kind I have referred to so often. The finger bones were so arranged as to show that these ornaments had been clasped in the hands at the time of the burial of the body. A portion of another of these ornaments was on the neck bones in contact with the under jaw. On each side of this copper ornament was a canine tooth of a bear, with the lateral perforations. Partly over the bear's tooth, on the left side, was a piece of native copper, which had been hammered roughly into a flat, thick, irregular sheet. This is without holes and is probably an unfinished ornament. Above this, and close to the skull, was a small copper cone, like many found on the altar of the great mound. Near the right shoulder was a large sea shell, like the others I have mentioned. This skeleton, as it lay in the grave, measured five feet ten inches from the top of skull to the tip of the great toe, and the individual was not far from five feet four inches in height when living. With the exception of a portion of the sacrum, which had entirely disappeared, this skeleton was taken out in a perfect condition. The decay of the sacrum was owing, probably, to the fact that a small round stone had fallen in such a way as to allow water to percolate around it.

This skeleton is a good illustration of the absurdity of the common notion that as soon as skeletons which have long been buried are exposed to the air they fall to dust. I always have a quiet laugh when I read notices of that kind, and you may put all such accounts down to inexperience and clumsy work of the person removing the skeleton. The fact is that it requires great care to remove the earth from about the bones, and very few persons will take the time to do it properly. As soon as a bone is uncovered most persons attempt to remove it at once, and of course it goes to pieces. Now if a skeleton is in dry earth or gravel, and is very dry and crumbling, the proper mode of procedure is to uncover the bones with great care, loosening the earth with the point of a small flat trowel and removing it from the bones by means of a small broom, or clothes brush, then let the moist air come in contact with the bones; or, if the air is very dry and hot, sprinkle the bones with water and let them absorb all they will. In this way the particles of bone swell and interlock, and after a while the bone can be safely taken up by avoiding force in removing it from the earth. In case the bones are in a wet clay or earth the matrix must be removed with great care. In such cases the bones are soft and spongy and they must be allowed to remain in place until they have dried off; but they must not be exposed to the full heat of the sun, otherwise they will crack and splinter as they dry. Of course instances often occur where we find only minute fragments of a skeleton in a grave, all the rest having passed through a chemical change and been reduced to earthy particles; but that every bone found in a grave can be preserved by using proper care I know from long experience to be the case. I may also call your attention to the fact that the state of perfection of the skeleton, outside of certain limits, is not evidence, by itself, of the antiquity of the bones, as the conditions of burial, as well as the character of the bones and of the earth in which they are found must be taken into account.

In our exploration of this burial place we found three large pits, which were covered with gravel and stones, like the grave I have just described. These pits had been dug through the compact, iron-cemented gravel below the clay, even to the depth of five feet, and all the material taken from them had been carried away. The pits were then filled with ashes and burned earth, and covered with several inches of gravel and stones, like a grave. The sides of the pit were not burned, so it is evident that the ashes were not from fires on the spot. There were several places uncovered by our excavations near these pits and graves where fires had been made on the clay or gravel, but the ashes had been removed, and hence it is probable that they had been put in these carefully marked pits. But what had become of the gravel taken from them?

You will remember that in the great mound of the group of altar mounds, there was a layer of gravel two or three inches thick which we have called the concrete layer. This gravel was cemented by a large amount of iron, and it has been a puzzle where the iron came from. It was far too great in amount to have been derived from the clay in the mound above, and, besides, the gravel of the same layer about the edges was loose and light without any mixture of iron. Now, this iron-gravel from the burial place is of the same character as that forming the concrete layer in the mound, and it, therefore, seems probable that these pits must have been dug for the purpose of obtaining it. As this gravel had been used during the extensive ceremonies which must have taken place at the time the mound was constructed, the very place from which it was taken seems to have been held sacred, and the pits therefore filled with burnt material, covered over and marked in the same manner as some of the graves. This, again, is further evidence of the connection of the burial place and the ceremonies which took place there with the altar mounds. The more we examine into the details of this wonderful group of ancient works, the more interesting and instructive they become. We have already spread before us the outlines of a grand picture of the singular ceremonies connected with the religious and mortuary customs of a strange people. There are still some touches to be given before the picture is complete, but it is more perfect than any other that has been drawn, and as our work progresses we may yet be able to fill it out, and finally present it as a perfect whole. Unfortunately, other duties call me home at once, and for some months I shall not be able to give personal supervision to the work, but it will be continued under the direction of Dr. Metz so long as the money in hand holds out. Will more be forthcoming to enable us to keep on to the end? Friends to the cause of American Archæology must answer this. On my way home I shall visit the "serpent mound" again, and will try and write to you from that wonderful monument of an ancient race.

Yours very truly,

F. W. PUTNAM.

The work was continued at this ancient burial place for two months after I left, under the immediate charge of Dr. Metz, the men remaining in camp until the cold became too severe for outdoor life. During this time, a large area within the great enclosure was dug over and so many graves, pits and hearths, similar to those described, were discovered as to leave no doubt that a large number of persons were buried within the earth wall surrounding this area, and that the graves in the gravel, containing both skeletons and burnt remains were those of the people who had made these mounds and earthworks. Dr. Metz also carried on the exploration of the small and nearly obliterated mound, within the circle at the northern portion of the great enclosure, and found that a burial like those in the gravel had taken place there and that the mound had been erected over the grave. This gives us another interesting fact in connection with this group of works. Sections were made through the walls of this circle and it was found that it was constructed of two or three layers of stones, over which earth had been placed. This is another indication of the amount of labor yet to be done before we shall know all that this interesting place will tell of the singular ceremonies and works of this ancient people. We must yet work here for many months, and thanks to the enlightened interest which Mr. Turner and his sons have taken in the investigation, we can trust to their cordial coöperation.

The other discoveries turned our thoughts anew to the isolated mound opposite the eastern opening in the great enclosure, the one at which we first worked in May, 1882, when our time and means were too limited for extended investigation and before we had discovered the necessity for the thorough exploration we have since been making of this group of earthworks. This mound we had explored to the level of the surrounding clay, but had not gone down to the gravel below the clay. The recent discoveries convinced us that the gravel under the mound should be examined, and on doing so Dr. Metz was rewarded by the discovery of a large grave, made of stones, under what was the centre of the mound, and at one side another, but smaller grave, of the same character. Both these graves contained skeletons extended at full length. With the large one were a number of most interesting objects, among which may be mentioned ornaments cut out of shell and containing large pearls set in the shell. There was also with this skeleton

a pipe carved out of stone, with a flat base through which is a small perforation that connects with two bowls which stand upon the slightly curved upper part of the base. This is the first time, to my knowledge, that a double-bowled pipe has been found in the Ohio mounds, and is only the third pipe we have discovered during our exploration of this group. (One was in a grave with burnt human remains, and the other was on the altar of the Marriott mound no. 2.) It is well to recall the fact that in the centre of this mound, on a level with the surrounding clay, we had formerly found a large bed of ashes in which were three vessels of pottery, thus showing that a fire had been made over the grave of the person in whose honor the mound was probably erected; also that at one side of the central ash-bed burnt human remains were found. Thus cremation and inhumation are everywhere found to be closely connected with the mortuary rites of this people, which opens a line of comparative study that will prove of interest as we work out the details of this instructive group of works

In connection with our researches in Ohio, Mr. Kimball and myself made another visit to the Serpent mound in Adams county, and we were surprised to find that this interesting monument had suffered much from vandalism since our former visit. It is evident that it will be soon a thing of the past unless it is at once protected. To this end we made an offer to Mr. Lovett, the owner of the land upon which this effigy is situated, for about fifty acres of his farm including the Serpent, but he was unwilling to sell the part desired unless he could dispose of the rest of his farm. The price he asked, while unquestionably a fair one for the farm, was a larger sum than we could hope to raise. Before our visit I had been assured of the liberal assistance of several ladies if the mound could be bought at a fair rate. Their object was to purchase the place and give it in charge of the Museum in accordance with a plan which I had proposed. The latest proposition from the owner is that we should take a strip running from the north to the south border of his farm including the Serpent mound, but this would, at the price asked, still bring the cost to a larger sum than I am authorized to offer. It will be a source of never-failing regret if this interesting monument of antiquity cannot be placed in the perpetual charge of the Trustees of this Museum, or of some permanent body in the state of Ohio. There are other ancient monuments of

equal interest in other ways, which are fast being destroyed, and could we but secure this Serpent mound the general interest would be so aroused by the fact that, in all probability, many other ancient works would be spared which otherwise may be destroyed for the sake of preparing the ground for cultivation. The stir we have made in this connection has had one good effect already, and the state of Ohio may yet do something before it is too late, although the proverbial inability of realizing the importance of things at your door is one which may interfere with any speedy legislation on the subject. We can only hope that the owners of the land upon which these old monuments stand will not allow them to be destroyed until they can be thoroughly explored by parties who will do the work in a proper manner, and secure the results to some permanent institution for the advancement of American archaeology.

Miss Fletcher has given such time as she could to the preparation of her papers relating to the Omahas, to which I have referred in former reports. The value of the material she has been able to obtain through her intimate association with that people and the well-deserved confidence which has been given her by a large portion of the tribe, has led to an enlargement of the plan of her work, so that it will form a history of the Omahas with a description of their social and religious customs. The great importance of the work will be due to the fact that she has learned to view things from the Indian standpoint and is thus able to present the underlying principles which govern all acts and customs of the Indian; without a knowledge of which, rites and customs of the deepest import to the Indian appear trivial to the thoughtless observer.

These papers would have been completed ere this, had not Miss Fletcher been appointed by the United States Bureau of Education to prepare an extended report on Indian civilization and education, called for by an act of the Senate. This report is already partly in type and will prove a valuable document. In this connection she was, during the past year, invited by the United States Commissioner of Education to visit the schools in Alaska and note the educational needs and opportunities of the inhabitants. From this trip she has recently returned, having visited southern and southeastern Alaska and the Aleutian Islands. While in this interesting region Miss Fletcher had several opportunities to secure various

objects for the Museum, and to interest residents in its behalf. As a result of this we have already received several implements from Alaska made of the jade-like stones of that region, and a piece of the so-called jade of the Yukon, obtained by Lieut. Stoney, which is probably serpentine. All these specimens will soon be reported upon by a competent mineralogist. Miss Fletcher was also fortunate in discovering a few fragments of pottery at an old village site on the southwestern end of Kadiak island. This is the first native pottery I have seen, from southern Alaska, and it is remarkable for its extreme coarseness of structure. The fragments are portions of a large shallow vessel, the bottom of which is one and one-half inches and the sides one-half an inch in thickness. The clay contains so much coarse sand that it seems as if there was hardly enough to hold the small rounded pebbles together, and in fact the pieces crumble on being handled. The inside of the vessel, however, is smooth, and the thick coating of soot over the outside of many of the pieces shows that it was used for some time over a fire. The vessel was apparently formed by first making the round, thick bottom from a mass of clay, then pressing out a thick sheet of clay and folding it about the bottom piece. The lip of the vessel is smooth and flat.

It is with pleasure that I am able to state that Mrs. Zelia Nuttall has become one of the collaborators of the Museum, with special reference to Mexican archæology, a field in which, by family associations and long residence in the country, she is able to perform thorough and important work. Familiar with the Nahuatl language, having intimate and influential friends among the Mexicans, and with an exceptional talent for linguistics and archæology, as well as being thoroughly informed in all the early native and Spanish writings relating to Mexico and its people, Mrs. Nuttall enters the study with a preparation as remarkable as it is exceptional. The two papers which Mrs. Nuttall has published, one, with many illustrations, in the *American Journal of Archæology* for June and September last, entitled "The Terra-cotta Heads of Teotihuacan," and the other in the recent volume of *The Proceedings of the American Association for the Advancement of Science*, entitled "Preliminary note of an analysis of the Mexican codices and graven inscriptions," are sufficient evidence of her powers of research and description. The first explains the origin and occurrence of

the thousands of little figures of human heads found near the two great pyramids of Teotihuacan. The other paper opens a new line of research in relation to ancient Mexican inscriptions and pictography, or, to use her own language, she has found by a translation into the Nahuatl language of the phonetic symbols contained in the Vienna Codex and the Selden and Bodleian Manuscripts "that these entire codices are composed of signs representing parts of speech forming, in combination, words and sentences. "Moreover," she adds, "I have discovered certain determinative signs that render a misinterpretation of these picture writings impossible. The Vienna Codex and the Bodleian and Selden Manuscript are records of lands, tributes, tithes and taxes. A partial decipherment of portions of the Borgian, Vatican and Féjéroary Codices convinces me that these do not relate, as has been supposed and maintained, to astrological and exclusively religious matters, but deal with the details of a communal form of government, the existence of which has been suggested by some recent writers but not sufficiently proved to be generally accepted."

Mrs. Nuttall is now in Europe for the purpose of continuing her researches on the originals of the several Mexican Codices, and will in time give to the Museum the results of her labors.

Mr. Carr, while principally engaged upon historical studies, has from time to time given important voluntary assistance in the Museum work, and has prepared the abstract from the catalogue showing the additions to the Museum during the past year, as printed in this report.

To the indefatigable labors of Miss Smith, I am indebted for assistance in administrative duties, which her long experience renders her so well qualified to perform. Besides keeping the books of the Museum, she has done much to aid me in a constantly increasing and burdensome correspondence, as well as in taking charge of the library, and making the entries in the Museum catalogue from my dictation. She has also assorted and prepared for cataloguing the Wyman collection from the shellheaps of Maine and Massachusetts, which is the last lot of the unarranged material in the Museum at the time I was placed in charge.

The only specimens now uncatalogued are those belonging to the recently acquired Bucklin collection from Peru, the specimens from the Damariscotta shellheap, and the large amount of mate-

rial obtained during the past two years from our special explorations in Ohio.

Miss A. E. Putnam has been employed a portion of the year in painting numbers upon the specimens as they are catalogued, and in aiding in various clerical duties.

To Mr. Chick, who has continued to hold the responsible position as an assistant in charge of the building, I have been under constant obligation, not only for his careful and economical management, but for assistance and advice in many ways. In fact, were it not for his readiness and mechanical ingenuity displayed on many occasions, we should have had many calls on our limited income for outside service, and his thorough and unflagging interest in the Museum is such that I am sure the charge of the building could not be intrusted to more faithful hands.

While thus recording with pleasure the works of those who unitedly and in their various positions make it possible for the objects of the Museum to be advanced, it is with regret that I am called upon to state that two of our former collaborators have been obliged for pecuniary causes to seek other fields of labor, and the loss of their assistance is one of the reasons that has led me to suggest the possibility of the foundation of a form of scholarships, by which means might be at hand for the support of deserving students or assistants, and at the same time for securing skilled labor for the Museum.

The first called from us is Mr. Nickerson, a young man, who, during the time he was associated with us in our work of special explorations in the field, evinced an aptitude for archæological research which I greatly regret could not have been further encouraged by providing a small salary for his support.

The second to leave us is Miss Studley, who had been with us, first as a student and afterwards as assistant in special charge of the osteological collection of the Museum, for nearly five years. During this time Miss Studley was engaged in a study of the human skeletons contained in the Museum, and by application to that special research had become a proficient craniologist, and as she had already been a medical student, during which time she had secured a knowledge of human anatomy, she was well pre-

pared by her studies and general education to be a valuable worker in a department which requires minute and careful research. Unfortunately, just at a time when cases were ready for completing the detailed arrangement of the large collection of crania and skeletons, which she had so well begun, she felt the necessity of obtaining an addition to her income, beyond our means to provide, and therefore accepted another position where she could still continue in scientific work. The paper by Miss Studley on the human remains from the caves in Coahuila, published in the Sixteenth Report of the Museum, is evidence of her ability in anthropological research, and it is much to be regretted that the Museum no longer has the benefit of her services.

As this report will close the third volume of the Museum publications, and as the Museum is now to be more intimately connected with the University, it is a proper time to consider a scheme of future publication, and the change of the Museum year so as to make it harmonize with that of the college. I therefore respectfully suggest that, in the future, a brief annual report should be presented to the President and Fellows of the University at the same time that they are presented from the other departments. Such a report would consist of the Treasurer's statement and an abstract of the doings for the year by the Curator, which, as heretofore, would be made to the Board of Trustees. This report would then be considered by the Trustees, and with such changes and additions as they might think desirable would be transmitted to the President and Fellows as the Annual Report of the Trustees, in accordance with one of the provisions of Mr. Peabody's Instrument of Trust.

Such a brief report, however, would not be all that the work of the Museum calls for and it would, therefore, be necessary to issue regular publications, which should contain such special papers as may be prepared by the officers and others in connection with the researches made under its auspices, or upon material contained in its collections. Such publications, probably, would be best in two forms. One might be called the Bulletin of the Museum, and would contain such special papers as have heretofore been printed in the annual reports and could be of uniform size with the reports. A bulletin could be issued whenever a special paper was

prepared and means would permit of its publication. Of course, the plan would be to page the bulletins consecutively until a volume was completed. The other form might be a quarto publication, which could be called the *Memoirs of the Museum*, each number to contain a special paper, the character of which required larger illustrations than the page of the bulletin would allow. Of course, these memoirs could be seldom published in the present condition of the Museum funds, but it would be of great value to the Museum if they could be occasionally issued.

In order to permit the publication of both bulletins and memoirs it would be necessary to limit the distribution of copies to exchanges for important journals and transactions, and to those persons who wished to purchase them. Heretofore, our reports have been largely distributed free of charge, and while such a distribution has unquestionably been the means of adding many specimens to the Museum and in making its objects widely known, the time has come when the only exceptions in the distribution of the special publications, as proposed, should be to those patrons of the Museum whom we may hope will take a generous interest in its welfare. That the sale of the bulletins and memoirs would be considerable we have every reason to believe from the wide and rapidly-increasing interest in archæological and ethnological studies, but that the income from that source would be sufficient to pay the cost of publication, it would be unwise to expect.

Believing that you will receive the several suggestions I have taken the liberty to make in this report as an evidence of my desire to do all in my power to advance the Museum, and that they will receive that consideration from you which they may seem to demand at a time when a new period has begun in the history of the Museum, this report is

Respectfully submitted,

F. W. PUTNAM,

Cambridge, Mass.,

Curator of the Museum.

March 22, 1887.

ADDITIONS TO THE MUSEUM AND LIBRARY
FOR THE YEAR 1886.

ADDITIONS TO THE MUSEUM.

38849—38850. Stone arrowheads from the ruins in Montezuma Valley, and cord made of the fibre of Yucca, from cliff-houses in Walnut Cañon, Arizona.—Collected and presented by Rev. W. D. WESTERVELT, Denver, Col.

38851—38860. Fragment of cotton cloth, with a specimen of native cotton and seeds, from cliff-houses near Salt River, Arizona; clay vessels and a rude animal figure in the same material from Medicine cave on the summit of Sierra Ancha; Apache water-jar and horse-shoe from Arizona Territory.—Collected and presented by Captain JOHN G. BOURKE, U. S. A.

38861—38862. Sandals made of bayonet fibre from a cliff-dwelling in Ara-way-pa Cañon, Arizona.—Collected and presented by Captain F. E. PEIRCE, U. S. A.

38863—38875. Quartz point, from the bank of Esopus Creek, near Saugerties, N. Y., and a small collection of stone arrowpoints from the Dalles, Columbia river, Oregon.—Collected and presented by Mr. FRANK H. SELLERS, Chicago, Ill.

38876. Native woman's skirt from Abyssinia.—Presented by Dr. ALEXANDER AGASSIZ, Cambridge.

38877—38885. Fragment of leather with copper beads, from a mound on Macoupin Creek, Green Co., Ill.; pottery vessels, Union shells cut and perforated, and a pendant made from shell, from a mound on the bluffs in St. Clair Co., Ill.—Collected by Hon. WILLIAM MCADAMS, Alton, Ill., and received in exchange.

38886—38929. A stone gorget from Mendham, Morris Co., N. J.; a jasper knife from Belvidere, Warren Co., N. J.; an obsidian chip, a grooved stone axe and celt, with a number of knives, scrapers and arrowpoints of stone, from Dr. Abbott's farm near Trenton, N. J.; palæolith from the talus of the bluff of the Delaware river; a quartz implement, five feet from the surface, and a portion of a human temporal bone, eleven feet from the surface, in the Trenton gravel.—Collected and presented by Dr. C. C. ABBOTT, Trenton, N. J.

38930. Fragment of antler and deer's bone from Watson's Hill, Plymouth, Mass.—Collected and presented by Mr. J. C. KIMBALL.

38931—38932. Native Mexican basket and braided mat from Puebla, Mexico.—Presented by Mrs ZELIA NUTTALL.

38933—38936. Recent (fraudulent) soapstone pot from the quarry at Millbury, Mass.; fragment of steatite pipe, with a clay pipe from Georgia,

and a clay tube from Gwinnett County, Georgia. Presented by RICHARD O'FLYNN, Worcester.

38937. Skeleton of an Indian from Brighton, Mass.—Collected and presented by Dr. D. D. SLADE, Cambridge.

38938—38943. Native mats from the Marquesas and Hawaiian Islands; guitar and woman's hat from Canton, China, and clay images, male and female, made by Pueblo Indians.—Collected and presented by Mr. WILLIAM T. BRIGHAM, Boston.

38944—38945. Rain coat from Hong Kong, China, and mask from Hawaii.—Presented by Miss A. E. NEWELL, South Boston.

38946—38948. Cranium of Flat-head Indian from Oregon, and two crania from mounds in Florida, the latter collected by R. S. WARREN, M. D.—Presented by the BOSTON SOCIETY OF NATURAL HISTORY.

38949. Mat from the Hawaiian Islands.—Collected and presented by Dr. ALEXANDER AGASSIZ, Cambridge.

38950—38951. Small human figures in clay from Mexico.—Collected and presented by Mrs ZELIA NUTTALL.

38952—38955. Shell beads from Union Springs, Cayuga Co., N. Y.—Collected and presented by Mr. W. W. ADAMS, Mapleton, N. Y.

38956. Terra-cotta figure from Teotihuacan, Mexico.—Collected and presented by Mrs ZELIA NUTTALL.

38957—38960. Specimens of felsite and varieties of flint from different localities.—Collected and presented by Prof. H. W. HAYNES, Boston.

38961. Stone gouge from Newton Centre, Mass.—Collected and presented by Mr. WILLIAM D. PHILBRICK, Newton Centre.

38962—38972. Crania and human bones, hammerstone, stone celt, with fragments of pestle and notched sinkers of stone, and fragments of pottery, from different places in Cayuga Co., N. Y.—Collected and presented by Mr. W. W. ADAMS, Mapleton, N. Y.

38973—38974. Copper axe and stone gorget from the valley of the Delaware in Bucks Co., Penn.—Collected by Mr. KEIM and presented by Dr. C. C. ABBOTT.

38975. Chipped stone scraper from Byfield, Mass.—Collected and presented by Mr. E. H. BLOOD.

38976—38989. Two discoidal stones, with stone celt and ornament and drills, scrapers, and points also of stone, from Bales' Mills, Lee Co., Va.—Collected and presented by Mr. J. H. BALES, Bales' Mills, Va.

38990—38995. Fragment of pottery, with shells and bones of fish and deer, from a small shellheap on banks of Sautnit river, Cotuit, Mass.—Collected and presented by FRANCIS C. LOWELL, Esq., Boston.

38996—39239. A stone axe, gouge and pestle, stone hoes, hammer stones grooved and notched, a number of chipped points of stone, and fragments of pottery, from near Wellfleet, Cape Cod; a soapstone pot and two stone pipes from northern Georgia; chungkee stone, fragment of gorget and stone axes and celts from Transylvania Co., N. C.; stone axes and celts, with fragments of steatite pots, and stone ornaments; hammer and rubbing stones, pitted and plain, chipped pieces of quartz, and cores

of the same, with a large collection of drills, scrapers, arrow and spear-points of stone, and fragments of pottery, from Greenville Co., South Carolina.—Collected by E. H. BLOOD. By PURCHASE.

39240—39277. Several baskets and basket dishes, thirty-three feather head-dresses, forty-five bone whistles, implements of antler, fragments of stone implements, shells and shell ornaments, braided grass, and six perforated club stones mounted on wooden handles, from a cave in the San Martin mountains, Los Angeles county, Cal.—Collected by and received from Mr. STEPHEN BOWERS.

39278—39298. Copper celt; stone plummet, celts, scrapers and points; rubbing stones of natural form, and pitted stones, from North America.—Presented by Dr. ALEXANDER AGASSIZ.

39299. Ashes of the pottery tree, from Guiana.—Collected and presented by the late Prof. J. WYMAN.

39300. Cranium of North American Indian.—Presented by the WORCESTER SOCIETY OF NATURAL HISTORY.

39301—39310. Cranium and other human bones, with earrings of copper wire, a silver breast-ornament, fragments of pottery and ashes, from a mound on Lake Butte des Morts, Wis.; copper bracelets from Ohio and a whistling jar from Peru.—Presented by Mr. WILLIAM S. APPLETON, Boston.

39311—39313. Stone points from the farm of Gen. Wm. Sutton, Ipswich, Mass.—Collected by Gen. SUTTON, and presented by Mr. H. W. PUTNAM, Salem.

39314. Confection made of cactus from Mexico.—Presented by Mrs ZELIA NUTTALL.

39315. Small brass tubes from an Indian grave between Fall River and Taunton. (This is a portion of the so-called armor of the "skeleton in armor").—Collected by the late Dr. J. V. C. SMITH, and presented by Dr. S. KNEELAND, Boston.

39316—39770. Two hundred and thirty-three stone celts; one round, one plain and three animal-shaped stone-metates; flakes and points of argillite; jasper drills; and three hundred and twenty-five pottery vessels of many different shapes, some plain and others ornamented with colored and incised patterns, also whistles, rattles and other small objects of pottery from ancient graves in Chiriqui, Panama.—Collected by Mr. J. A. McNIEL. By PURCHASE.

39771. Natural stones resembling chipped and rubbed implements, from the Island of Tuckanuck, Mass.—Collected and presented by Dr. R. M. HODGES, Boston.

39772. Large pottery vessel from a mound in Arkansas.—Collected by Capt. HALL and presented by DAVENPORT ACADEMY OF SCIENCES.

39773. Burnt clay with impression of canes from near Nashville, Tenn.—Collected and presented by Mr. W. D. BULHANAM, Nashville, Tenn.

39774—39780. Worked piece of coal from a stone-grave near Nashville, Tenn.; drills of flint and jasper and stone points from near Nashville.—Collected and presented by Mr. GEO. T. HALLEY, Nashville, Tenn.

39781—40096. A copper ornament, three small human images, in clay, and two hundred and seventy-five pottery vases, bottles, jars, of different shapes, sizes and styles of ornamentation. Some are painted, others are ornamented with human and animal figures in relief, while still others are in the form of men, animals and vegetables. Thirteen are whistling jars. All from the Province of Piura, 120 miles north northwest of Lambayeque, Peru.—By PURCHASE.

40097—40107. Small bowl and a tripod of pottery from Ometepe; stone axe with a slight groove, from a hill west of Diriamba; head from a hill southwest of Lake Nicaragua; stone beads found on stone mounds near the same lake; jasper pebbles from Nacaserbo beach, Costa Rica; fossil leaves from the Managua quarry and from the tufa beds at Jeno-tepe. Yellow sand from under the lower bed of tufa at the Managua quarry, and fossil shells from beach of Lake Jilva, Nicaragua.—Collected and presented by Dr. EARL FLINT, Rivas, Nicaragua.

40108—40109. Sioux war jacket, and an Omaha scraper made of bone.—Collected and presented by Mr. FRANCIS LA FLESCHE, Washington, D. C.

40110—40192. Shells of different kinds and bones of animals from shellheaps on Buttermilk Bay, and at Wareham, and Cotuit Port; fragments of pottery and pieces of charcoal from shellheaps at Buttermilk Bay, East Wareham, and Cotuit Port; chipped stones from shellheap at old Pau, Wareham; bone point and cut pieces of bone from shellheap at East Wareham and Cotuit Port; human bones from shellheap at Cotuit Port, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN.

40193—40204. Animal bones and potsherds from shellheap at Cotuit Port, Mass.—Collected and presented by Mr. GEO. G. LOWELL and Dr. SAMUEL A. GREEN, Boston.

40205—40236. Fragments of pottery, stone chips and a chipped stone implement, from a shellheap in Salisbury, Mass.; shells of different kinds, stone flakes, chips and points; bone points, and worked pieces of bone and bones of birds, fishes, and mammals, from shellheaps at Concord and Plum Island, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN.

40237—40241. Fragment of pipestem made of pottery; point of an antler used as an implement; cut pieces of bone, and pieces of cord-marked pottery from shellheap at Plum Island, Essex county, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN, and Messrs. LEWIS CABOT, jr., and ELLIOT CABOT of Brookline.

40242. Bone point from a shellheap on Plum Island, Mass.—Collected and presented by the late Rev. J. A. SWAN.

40243. Bone point from a shellheap on Plum Island, Mass.—Collected and presented by Mr. LEWIS CABOT, Brookline.

40244—40262. Sand, shells of different kinds, charcoal, fish, bird and mammal bones, and fragments of pottery, from a shellheap at Eagle Hill, Ipswich, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN and Mr. J. ELLIOT CABOT, Brookline.

40263—40280. Oyster and other shells, bones of deer, beaver, birds and

fishes, fragments of pottery and a bone point, from the great shellheap at Damariscotta, Maine.—Collected and presented by the late Prof. JEFFRIES WYMAN and the late Prof. E. A. CHADBOURN.

40281—40341. Shells of different kinds; bones of fishes, birds, bear and deer, some of them burnt; bone points and implements of antler; pieces of charcoal and fragments of pottery, from a shellheap at Crouch's Cove, Goose Island, Maine.—Collected and presented by the late Prof. JEFFRIES WYMAN.

40342—40369. Shells; bone points, and bones of birds, fishes and mammals, fragments of pottery and a stone pestle, from a shellheap at Crouch's Cove, Goose Island, Maine.—Collected and presented by the late Rev. J. A. SWAN.

40370—40405. Shells of different kinds, bones of fishes, birds and mammals; implements made of antler; cut bones and bone points; chipped stones, stone implements and fragments of pottery, from shellheaps at Mount Desert, Maine.—Collected and presented by the late Prof. JEFFRIES WYMAN and Prof. A. P. ROCKWELL.

40406—40417. Shells; bones of fishes, birds, and mammals; chipped points of stone and a bead of bone, from the shellheap on Hog Island, Mount Desert, Maine.—Collected and presented by Dr. R. H. FITZ, Boston.

40418—40420. Bones of fishes, birds and mammals, from a shellheap on George's River, Maine.—Collected and presented by Mr. CLEVELAND ABBÉ.

40421—40431. Bones of fishes, birds and mammals, from a shellheap at Hull's Cove, Mount Desert, Maine.—Collected and presented by the late Prof. JEFFRIES WYMAN and Dr. SAMUEL A. GREEN, Boston.

40432—40437. Shells of *Mya* and *Buccinum*, and animal bones, from a shellheap on Doane's Island, Frenchman's Bay, Me.; shells of *Macra* and bones of birds, from a shellheap on Plum Island, Ipswich, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN.

40438—40442. Chipped stone and stone implements from Bar Island, Mount Desert, Maine; stone flakes and chipped stone implements from banks of Nashua river, Groton, Mass.—Collected and presented by Dr. SAMUEL A. GREEN, Boston.

40443. Piece of human under jaw, from Essex, Mass.—Collected and presented by Mr. G. P. RUSSELL.

40444. Fish bones from Hyannis, Mass.—Collected and presented by Col. THEODORE LYMAN, Brookline.

40445—40446. Portions of a human skeleton and pieces of a brass kettle found with the bones, from Barnstable, Mass.—Collected and presented by Mr. J. ELLIOT CABOT, Brookline.

40447—40448. Human sternum and fragments of pottery, from Nantasket, Mass.—Collected and presented by the late Prof. JEFFRIES WYMAN.¹

40449—40502. Stone points, scrapers, flakes and drills; chipped flint

¹The entries in the catalogue from No. 40110 to 40448, cover the several collections made by the former Curator of the Museum and several friends prior to 1868, and include the material used by Prof. Wyman in his papers upon New England Shellheaps.

implements; perforated tablet of slate; stone celts and a grooved stone implement; piece of stone gorget; antler point, and fragments of pottery, from different places in the Little Miami valley, Ohio, collected by Dr. Metz and Judge SKINNER; chipped flint implements from Kentucky; a grooved stone axe and chipped stone implements, from the surface at Gladly Run, Brown Co., Ohio, collected by Dr. METZ.—Presented by Dr. C. L. METZ, Madisonville, Ohio.

40503—40505. Chipped stone implements from Gladly Run, Brown Co., Ohio.—Collected and presented by Mr. NICHOLAS BERGER, Vera Cruz, O.

40506—40509. Stone celt, two mullers and a grooved stone axe from Newtown, Little Miami Valley, Ohio.—Collected and presented by Mr. WILLIAM DURHAM, Newtown, Ohio.

40510—40513. Grooved stone axe, a celt, and chipped stone-points, from Vera Cruz, Brown Co., Ohio.—Explorations of Prof. F. W. PUTNAM and Dr. C. L. METZ, conducted for the Museum.

40514—40530. Stone points, drills and implements, from Brown Co., Ohio.—Collected and presented by Mr. BERNARD QUINN, Vera Cruz, O.

40531—40586. Grooved stone axes; a muller and nine stone celts, discoidal stone, and chipped scrapers, drills, and points from Clermont Co., Ohio; a water-worn bone, fragments of pottery, a discoidal stone, and stone points and other implements from a ploughed field about the Serpent Mound, Adams Co., Ohio.—Explorations of Prof. F. W. PUTNAM, Dr. C. L. METZ and Mr. JOHN CONE KIMBALL, conducted for the Museum.

40587—40685. Piece of mica, small perforated stone, and fragments of stone gorgets, a grooved stone axe, notched stone sinkers, and a number of knives, scrapers, drills and points in argillite, quartz and jasper, from Trenton, New Jersey.—Collected and presented by Mr. RICHARD M. ABBOTT, Trenton.

40686—40770. Fragment of argillite natural fracture, and a chipped mass of the same; two palæolithic implements, and points, drills, flakes, scrapers of argillite, quartz, jasper and flint; a perforated piece of slate; hammerstone, and a cut piece of soapstone, and three grooved stone axes, from Trenton, New Jersey.—Explorations of Dr. C. C. ABBOTT, conducted for the Museum.

ADDITIONS TO THE LIBRARY.²

Dr. C. C. Abbott, Trenton, N. J. Two pamphlets.

Dr. A. Agassiz, Cambridge, Mass. Report of the Museum of Comparative Zoölogy.

Mr. D. R. Alward, Auburn, N. Y. Two volumes, five pamphlets.

Dr. Richard Andree, Leipzig, Germany. One volume, two pamphlets.

Anvers, Belgium. Académie d'Archéologie de Belgique. Three volumes Annales, seven numbers Bulletin.

² The full titles of the volumes, and pamphlets of special importance, are published in the Quarterly Bulletin of Harvard College Library, the Museum Library being a branch of the General Library.

Auburn, N. Y. Cayuga County Historical Society. Two volumes Collections.

Mr. J. M. Batchelder, Cambridge, Mass. Two pamphlets.

M. le Baron de Baye, Baye, Marne, France. Three pamphlets.

Robert Bell, M.D., Montreal, Canada. Pamphlet.

Mr. A. F. Berlin, Allentown, Pa. Pamphlet.

Berlin, Germany. Königliche Museum. Four numbers Amtliche Berichte, one pamphlet.

C. J. Blake, M.D., Boston, Mass. Pamphlet.

M. le Prince Roland Bonaparte, Paris, France. Pamphlet.

Boston, Mass. Museum of Fine Arts. Report.

D. G. Brinton, M.D., Philadelphia, Pa. One volume, four pamphlets.

Brookville, Ind. Brookville Society of Natural History. One number Bulletin.

Buffalo, N. Y. Buffalo Society of Natural Sciences. Two numbers Bulletin.

Cambridge, England. Cambridge Antiquarian Society. Report, one number Octavo Publications.

Cambridge, Mass. Harvard College Library. Three numbers Bulletin, one pamphlet.

M. Emile Cartailhac, Toulouse, France. Twelve numbers *Materiaux pour l'histoire primitive et naturelle de l'homme*.

M. le Comte H. Charencey, St. Maurice-les-Charencey, France. Pamphlet.

Cincinnati, Ohio. Cincinnati Museum Association. Report.

Cincinnati, Ohio. Cincinnati Society Natural History. Four numbers Journal.

Mr. G. S. Conover, Geneva, N. Y. Pamphlet.

Mr. C. W. Darling, Utica, N. Y. Pamphlet.

Davenport, Iowa. Davenport Academy Natural Sciences. One volume Proceedings, one pamphlet.

Mr. A. M. Davis, Cambridge, Mass. Pamphlet.

Prof. G. M. Dawson, Montreal, Canada. Pamphlet.

Denver, Colorado. Colorado Scientific Society. Pamphlet.

Rev. J. Owen Dorsey, Washington, D. C. Pamphlet.

Rev. M. Eells, Skokomish, Washington Territory. Pamphlet.

Sig. M. Ferraris, Rome, Italy. One volume.

Dr. Otto Finsch, Berlin, Germany. Pamphlet.

Florence, Italy. Società Italiana de Antropologia, Etnologia e Psicologia Comparata. Three numbers Archivio, one volume.

J. G. Garson, M.D., London, England. Two pamphlets.

Mr. C. H. Guild, East Somerville, Mass. One volume.

Dr. Horatio Hale, Clinton, Ontario, Canada. Two pamphlets.

Halifax, Nova Scotia. Nova Scotian Institute of Natural Sciences. One part Proceedings.

Prof. H. W. Haynes, Boston, Mass. Pamphlet.

Mr. J. B. Holder, New York, N. Y. Pamphlet.

- Dr. P. R. Hoy*, Racine, Wis. Pamphlet.
- Jacksonville, Florida*. Southern Society of Civil Engineers. Pamphlet.
- Mr. S. R. Koehler*, Roxbury, Mass. Pamphlet.
- Dr. J. Kollmann*, Basel, Switzerland. Pamphlet.
- Königsberg, Prussia*. Alterthumsgesellschaft Prussia. Report.
- Mr. G. F. Kunz*, New York, N. Y. Pamphlet.
- M. Jules Leclercq*, Brussels, Belgium. Pamphlet.
- Leipzig, Germany*. Museum für Volkerkunde. Report.
- Mr. T. H. Lewis*, St. Paul, Minn. Two pamphlets.
- London, England*. Anthropological Institute of Great Britain and Ireland. Four numbers Journal.
- Lyons, France*. Société d' Anthropologie de Lyon. Bulletin.
- Prof. O. T. Mason*, Washington, D. C. Thirteen pamphlets.
- Prof. E. S. Morse*, Salem, Mass. Pamphlet.
- Munich, Germany*. Gesellschaft für Anthropologie, Ethnologie und Urgeschichte. Two numbers Contributions.
- M. le Marquis de Nadaillac*, Paris, France. Five pamphlets.
- Nashville, Tenn.* Tennessee Historical Society. One number Proceedings.
- Newcastle-upon-Tyne, England*, Society of Antiquaries. Two numbers Archaeologia Aeliana.
- New York, N. Y.* Academy of Sciences. Four numbers Transactions, two numbers Annals.
- New York, N. Y.* American Geographical Society. Five numbers Bulletin.
- New York, N. Y.* American Museum of Natural History. Two numbers Bulletin. Report.
- New York, N. Y.* Astor Library. Report.
- New York, N. Y.* Metropolitan Museum of Art. Report.
- Mrs. Zelia Nuttall*, Cambridge, Mass. Pamphlet.
- Paris, France*. Société d' Anthropologie de Paris. Four numbers Bulletin.
- Paris, France*. Société de Géographie. Three numbers Bulletin, twelve pamphlets.
- Prof. D. P. Penhallow*, Montreal, Canada. Pamphlet.
- Prof. G. H. Perkins*, Burlington, Vt. Pamphlet.
- Philadelphia, Pa.* Library Co. of Philadelphia. One number Bulletin.
- Philadelphia, Pa.* Numismatic and Antiquarian Society. Report.
- Mr. S. V. Proudfit*, Washington, D. C. Pamphlet.
- Providence, R. I.* Public Library. Report.
- Prof. F. W. Putnam*, Cambridge, Mass. Twelve pamphlets.
- Riga, Russia*. Gesellschaft für Geschichte und Alterthumskunde der Ostsee-provinzen Russlands. Report, one pamphlet.
- Rio de Janeiro, Brazil*. Museu Nacional. One volume Archivos, one pamphlet.
- St. John, New Brunswick*. Natural History Society. One number Bulletin.
- St. Paul, Minn.* Geological and Natural History Survey. Two volumes.

- St. Paul, Minn.* Minnesota Historical Society. Report.
- Salem, Mass.* Essex Institute. Fifteen numbers Bulletin.
- Salem, Mass.* Peabody Academy of Science. Report, one volume Memoirs.
- Mr. Stephen Salisbury*, Worcester, Mass. Two volumes.
- San Francisco, Cal.* California Academy of Sciences. Two numbers Proceedings.
- Mr. S. H. Scudler*, Cambridge, Mass. Two volumes.
- Prof. G. Sergi*, Rome, Italy. Four pamphlets.
- Stade, Hanover.* Verein für Geschichte und Alterthümer der herzogthümer Bremen und Verden und des landes Hadeln. One number Archiv.
- Stettin, Germany.* Gesellschaft für Pommersche Geschichte und Alterthumskunde. One volume Baltische Studien.
- Prof. J. B. Thayer*, Cambridge, Mass. Pamphlet.
- Mr. E. F. Im Thurn*, Georgetown, British Guiana. Pamphlet.
- Tokio, Japan.* Imperial University of Japan. Pamphlet.
- Dr. Paul Topinard*, Paris, France. Pamphlet.
- Toronto, Canada.* The Canadian Institute. Three parts Proceedings.
- Trenton, N. J.* Trenton Natural History Society. Pamphlet.
- Vienna, Austria.* K. K. Naturhistorisches Hofmuseum. One volume Annalen.
- Mr. C. Staniland Wake*, Welton, England. Two Pamphlets.
- W. F. Warren, LL.D.*, Boston, Mass. One volume.
- Washington, D. C.* Bureau of Education. Pamphlet.
- Washington, D. C.* Philosophical Society. Two volumes Bulletin.
- Washington, D. C.* Smithsonian Institution. Report.
- Washington, D. C.* U. S. Geological Survey. Report. Eighteen numbers Bulletin.
- Wilkes-Barré, Pa.* Wyoming Historical and Geological Society. Two volumes Proceedings.
- Mr. Justin Winsor*, Cambridge, Mass. Pamphlet.
- Hon. Robert C. Winthrop*, Boston, Mass. Two volumes, seven pamphlets.
- Worcester, Mass.* American Antiquarian Society. One number Proceedings.
- Worcester, Mass.* Worcester Society of Antiquity. One volume Proceedings.

BY PURCHASE.

- American Antiquarian for 1886.
- American Journal of Archæology for 1886.
- Revue d'Anthropologie for 1886.
- Science for 1886.
- Six parts of Physical Atlas.

PHOTOGRAPHS.

- Mr. Wm. W. Adams*, Mapleton, N. Y. Six photographs.
- Dr. Stephen Bowers*, San Buenaventura, Cal. Photograph.
- Mr. E. D. Hicks*, Nashville, Tenn. Photograph.
- Mr. J. W. Smith*, Alkali, Oregon. Photograph.

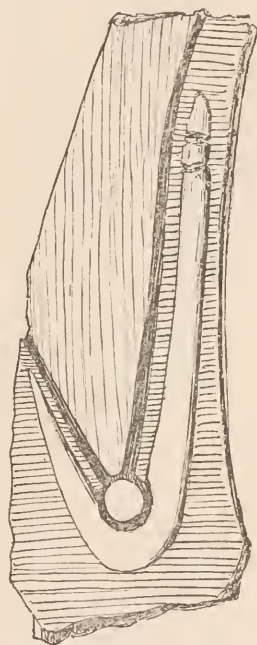
THE WAY BONE FISH-HOOKS WERE MADE IN THE LITTLE MIAMI VALLEY.

BY F. W. PUTNAM.

WHEN engaged in arranging the archaeological collection brought together by Dr. C. L. Metz before he became associated with the Peabody Museum, which was made over to the Museum in 1884, my attention was arrested by three pieces of bone found during the early explorations of the singular ash-pits in the ancient cemetery¹ near Madisonville, Ohio, with which work the name of Dr. Metz is so intimately associated. They were simply rough splinters from the leg-bones of deer, in each of which two grooves had been cut, meeting at an angle where a hole had been bored through the bone. The relation of these two grooves to each other was immediately suggestive of a roughly blocked out fish-hook, and upon placing a hook upon the bone this was made evident, as shown in the sketch, Fig. 1, which represents one of the pieces of bone upon which a finished hook is shown in outline.

In making one of these hooks, a splinter from a leg bone of a deer, of proper size, was selected, and a hole was bored near one end. The portion indicated by the vertical lines in the figure was then removed by making a cut from the upper end to the hole, and another from the hole obliquely to the side,

FIG. 1.

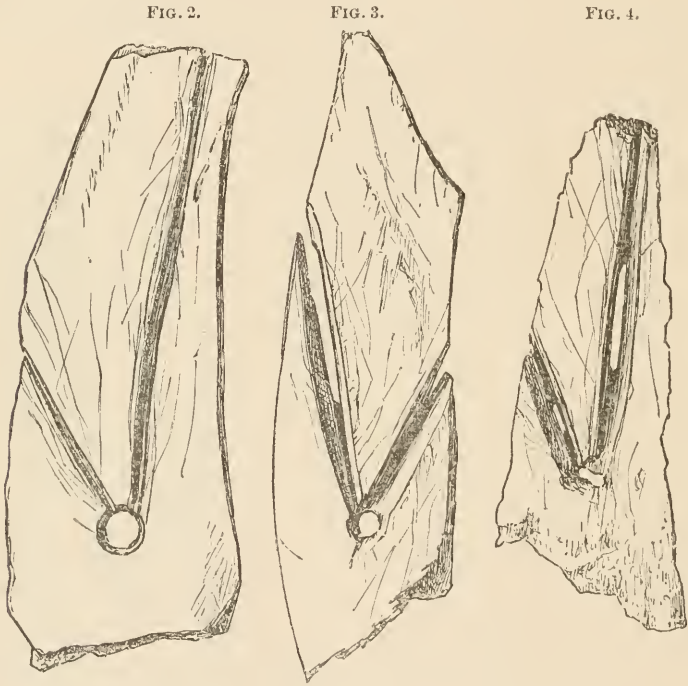


Sketch showing method of making a fish-hook of bone.

¹This place has now become so well-known to all interested in American archaeology that it is not necessary to do more than refer to the *Journal of the Cincinnati Society of Natural History*, Vol. III, 1880, pp. 40-48, 128-139; 203-220; and the *Reports of the Peabody Museum* Vol. III, pp. 63-67, 165-167, for accounts of the exploration of the place.

as shown by the deeply shaded portions in the figure. The inside of the hook was thus roughly formed. The portion of the bone, represented by the horizontal lines in the figure was next removed by cutting and rubbing on a stone; then the hook was smoothed by rubbing it in a grooved stone², and finally it was polished to the satisfaction of the maker.

Figures 2, 3, and 4 represent the three pieces of bone (Cat. No. 35,823) found in the ashpits by Dr. Metz.



Fish-hooks in process of manufacture.

Fig. 2. In this piece of bone the hole was carefully bored from both sides of the bone, with a flint drill as shown by the striae. The two slight grooves extending from the hole to the top and side of the piece show that the work of removing the piece of bone from

²Pieces of sandstone with grooves of various sizes, such as could well be used for this purpose, have been found in numbers in the pits, and in fact all the implements required for making a fish-hook in the manner described are at hand in the collection from the ashpits.

the inner portion was but just begun. The scratches along these grooves and upon the surface of the bone indicate that the cutting was done by a saw-like movement of the flint knife. The natural contour of the bone throws the point of the hook out of a vertical line with the shaft, as is noticeably the case with several of the finished hooks.

Fig. 3. In this piece the inner portion was nearly cut out by widening and deepening the two grooves on the outer surface of the bone, and a slight cut was made on the opposite side. A few strokes more and the piece would have been detached, but the work was left unfinished.

Fig. 4. The hook here designed was to have been smaller than the others. The workman, however, does not seem to have been so skilled; or, at all events, in boring and cutting this specimen there was not the same care given to the work as with the others. In this, the hole is roughly made, first by boring with a small drill from the under side and then by enlarging it laterally from both sides. The removal of the inner portion was nearly completed by cutting entirely from the outer surface of the bone, which has been cut through in the central part of each groove. As in the preceding, a few more strokes of the flint knife would have finished this part of the work.

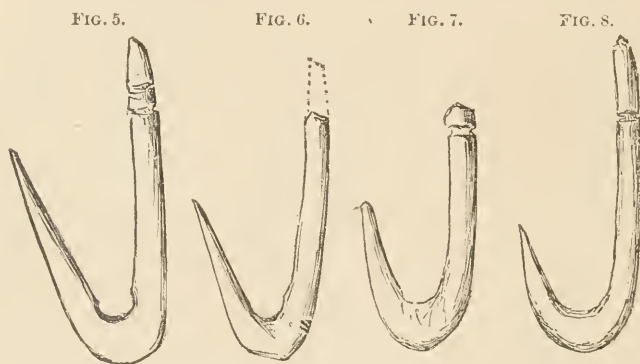
Dr. Ran, in his excellent monograph on Prehistoric Fishing, published by the Smithsonian Institution in 1884, has given figures of three fishhooks³ made of bone which were found in the ash-pits of the ancient cemetery, and four others, also from the ash-pits, are here represented from the Metz collection.

Of the latter, three (32520) are well finished, and one, Fig. 5, is a finely made and highly polished specimen, in which the lower half of the hole, bored when the hook was designed, is distinctly defined. Fig. 6 is a smaller but equally well finished hook, and the outline of a portion of the preliminary boring in the bone has not been obliterated. Fig. 7 is a hook very similar to the last but is rough from decay of the bone. Fig. 8 differs from the others in having the point, when compared with the shank, relatively shorter, and in having the inner surface of the shank and point flat, and the outer portion of the shank two-sided, thus giving a triangular section to the shank, as would be the case if the hook

³ Figs. 184, 191, 192. The last is remarkable in having a small hole drilled through the end of the shank.

were left without rubbing down after having been roughly shaped. The point, however, has been rounded and well sharpened.

In several of the bone fish-hooks found in other places in this country, and also in the Swiss Lakes, the outline of a portion of the hole bored at the first stage of manufacture is apparent in the bend of the hook. This is markedly the case in Rau's fig. 188 from Cunningham's Island, Lake Erie, as in my fig. 5, and also in his figs. 47 and 48 from the site of the Lake Dwelling at Wangen. This is also the case in the hook made of a boar's tusk from the Lake Dwelling at Moosseedorf, copied by Rau as fig. 46 from Keller's volume. Of the latter, Dr. Keller writes⁴ that "it was manufactured by boring two holes through the tusk, and cleaning away



Bone fish-hooks from the ashpits.

the space between them, and the whole was finished by scraping tools."

It will be remembered that the late Mr. Paul Schumacher⁵ describes the manufacture of the fish-hooks of shell by the California Indians, as made by boring a hole through the circular piece of shell and then cutting away the portion between the point and the shank. The singular fish-hooks of bone⁶, some with the barbs on the outside, from the same Indian graves in Southern California, were evidently made in the same manner, as shown by the perfect curve of the inner portions of the hook.

From an ancient burial place on a sandy ridge near the Little

⁴The Lake Dwellings by Keller, Lee's translation, Pl. XXII, fig. 5.

⁵See U. S. Geographical Surveys west of the 100th meridian, under Lt. Wheeler, Vol. VII, Archaeology, p. 223, Pl. XII, figs. 21-27. Also Rau, Prehistoric Fishing, p. 134.

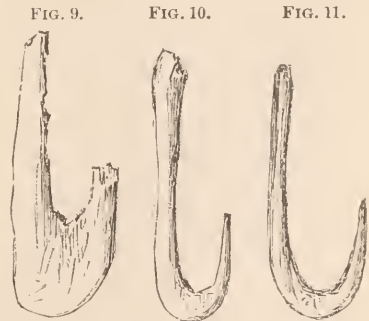
⁶Wheeler, Report, p. 222, Pl. XI, figs. 1-3, and Rau, pp. 129, 130, figs. 194-199.

Miami River, Dr. Metz obtained two perfect fish-hooks of bone and another in process of manufacture, which differ from those found in the ashpits. At this burial place there is an extensive refuse pile, and while many skeletons have been found during our recent explorations we have not discovered a single ashpit. So that, as far as burial customs are determinative, it is likely that distinct tribes lived at the two places, perhaps at different times. From this last mentioned burial place there is a portion of a large fish-hook, which is probably made from a piece of a deer's bone in the same manner as those from the ashpits, and from still another burial place in the valley, on Mr. Turpin's land, we have a fragment of a bone hook, very thick and broad below the bend, which was probably made by first boring the bone.

In making the three hooks from the burial place on the ridge not only were much smaller and thinner bones used than was the case with those from the ashpits, but the drill was dispensed with.

Fig. 9 is a representation of the one (33.064) in process of manufacture. The bone is unquestionably a piece split from the rib of a deer and it still has the cellular portion attached to the under portion. The lower part has been rubbed so as to form the outline of the curved part, and the point was in process of being shaped by cutting and scraping away the portion between it and the shank. The scratches in the notch show this to have been the method of procedure. To finish the hook, the notch would have to be cut a little deeper, and the remaining cellular portion would have to be scraped away, and the whole rubbed smooth with a piece of stone. As a result there would be produced a hook like the finished specimens from the same place (33062-3), shown in Figs. 10 and 11, which were probably made in this way.

It will of course be noticed that none of the bone fish-hooks here described have barbs, and it is questionable if the barb on the inside of the point was known in America until introduced by Europeans. Two or three bone hooks found in the state of New York



Bone fish-hooks from burial-place, Little Miami valley.

have barbs,⁷ but Mr. Beauchamp, who has given much attention to the village sites of the Iroquois, thinks that these barbed hooks were late imitations of European fish-hooks. The barbed Eskimo hook made of antler and figured by Dr. Rau, p. 131, was very likely copied from a steel hook. It is interesting to recall, in this connection, the singular hooks made of bone with the barb on the *outside*, from the graves in California. Many of the bronze fish-hooks found in the Swiss lakes are smooth-pointed while others are furnished with barbs like our ordinary steel hooks, and they are, probably, the earliest barbed hooks known, although Dr. Rau calls attention (Fig. 91, p. 71) to a bone fish-hook with a barb found in a peat-bog in Scania and described by Nilsson, which may possibly be of Neolithic age.

⁷One of these is represented in Dr. Rau's fig. 193.

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ERRATA.

The blocks for figures 14 and 18, pages 464-5, should have been transposed. Therefore on page 464, line 3, for Fig. 14 *read* Fig. 18, and on page 465, line 4, for Fig. 18 *read* Fig. 14.

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